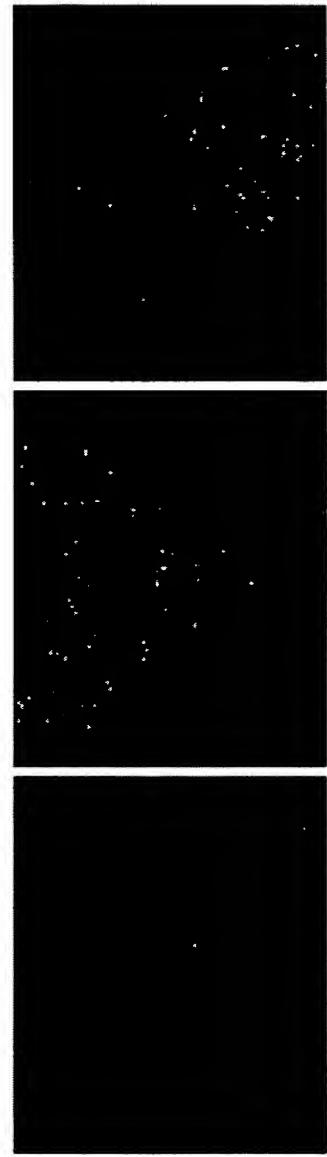
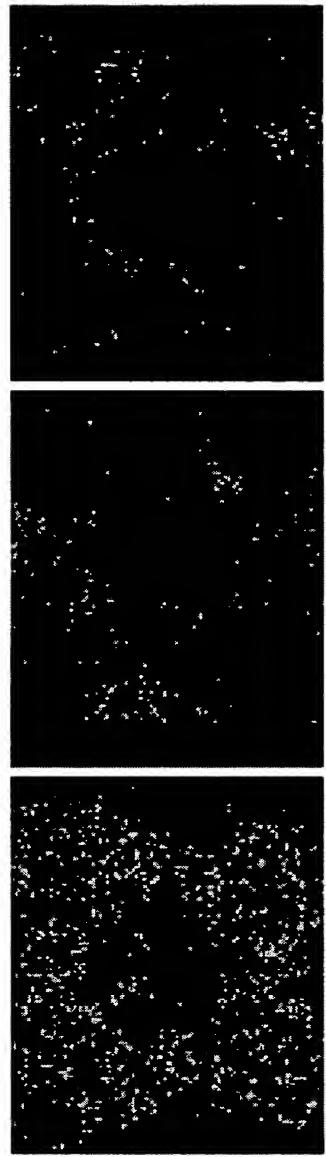


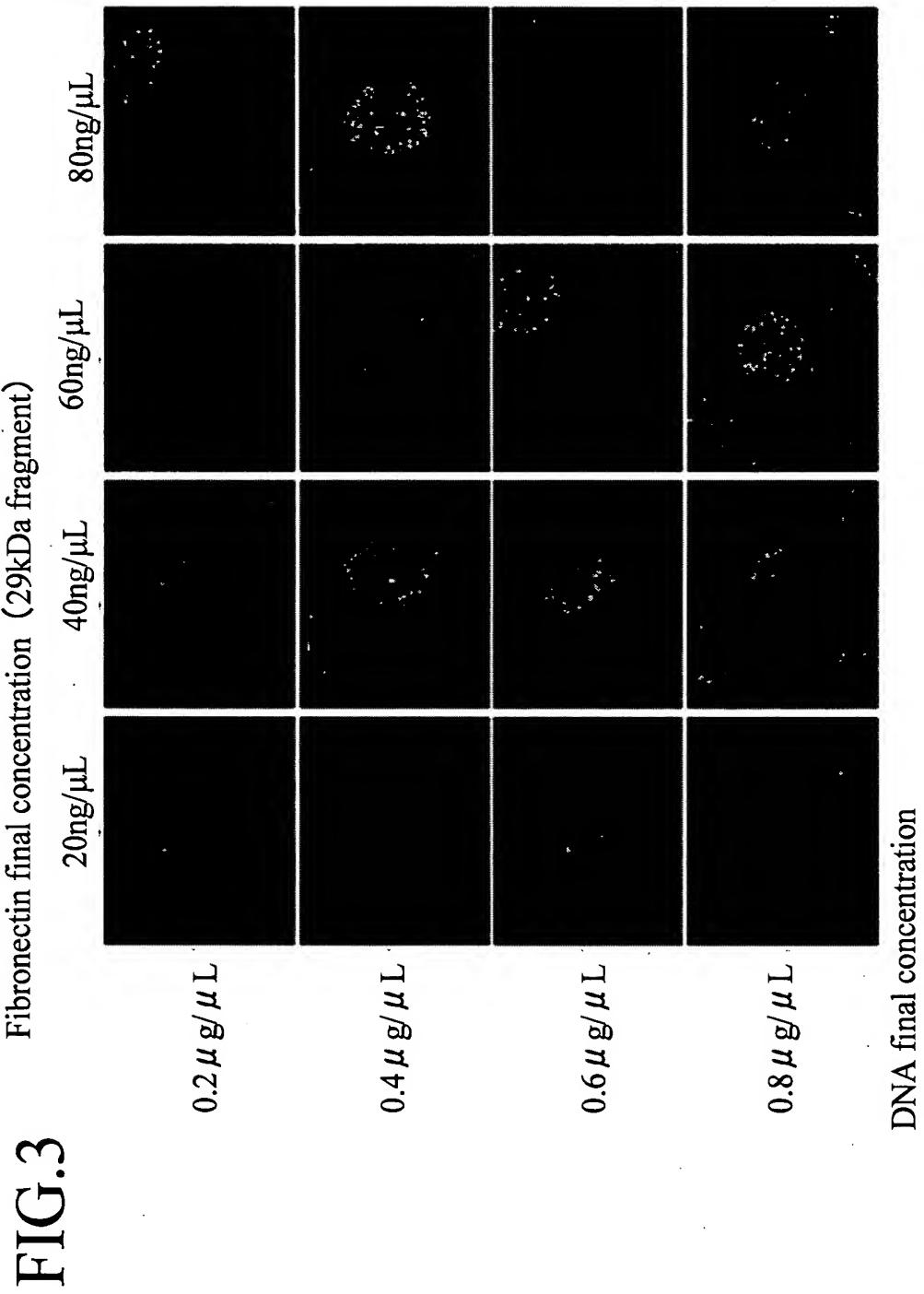
FIG.2

Fibronectin (43kDa fragment)



Fibronectin (72kDa fragment)





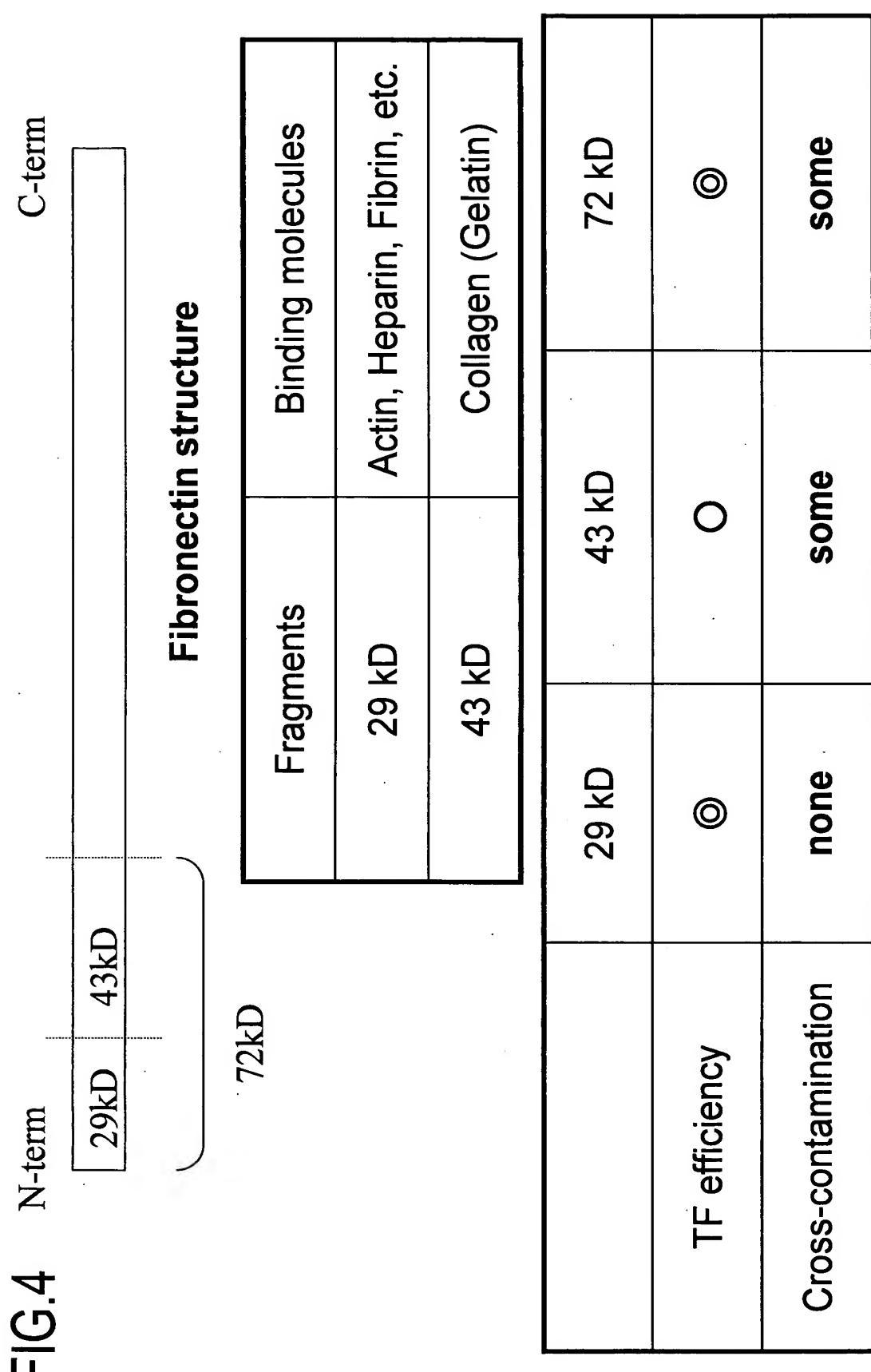
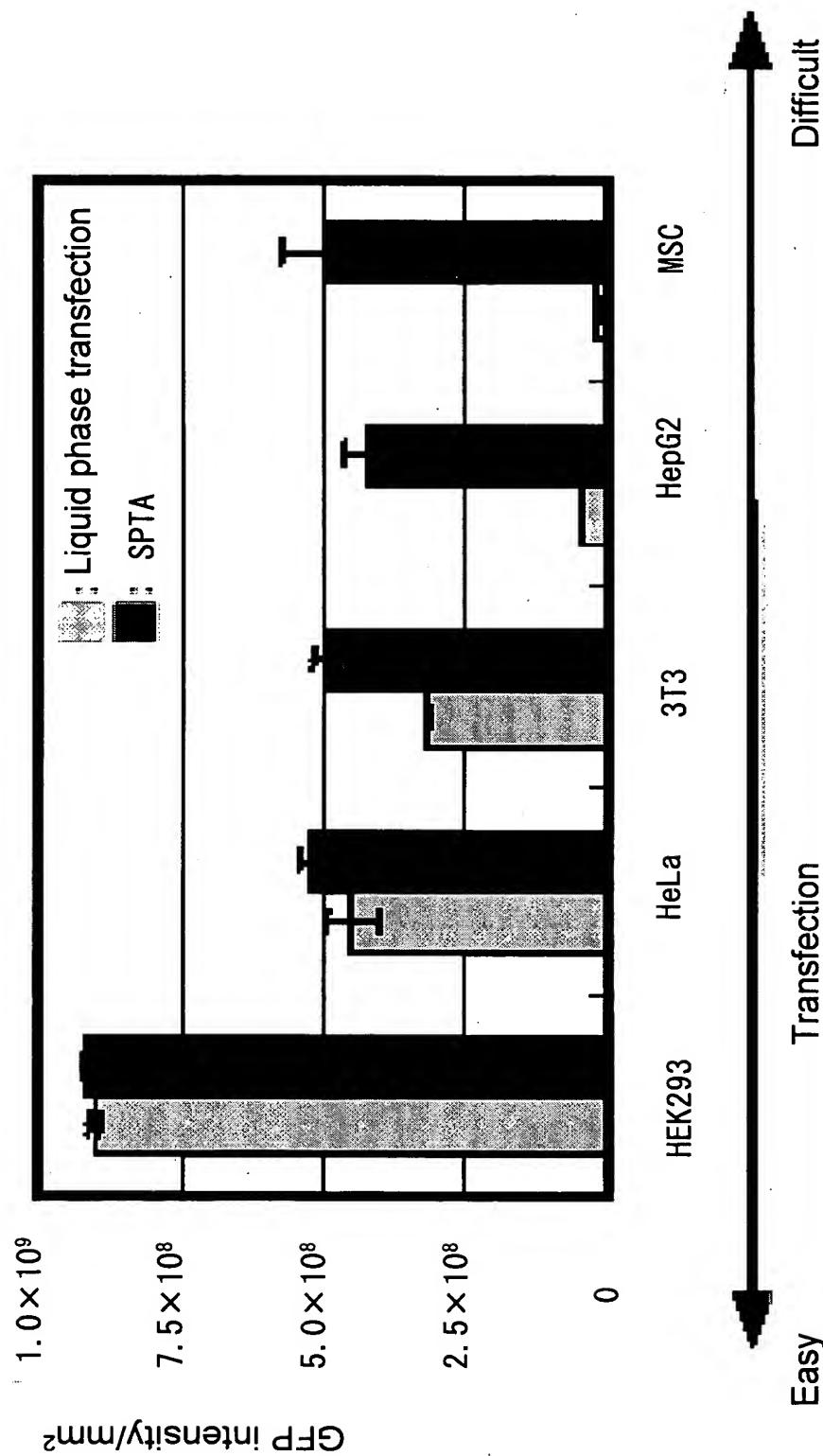


FIG.5



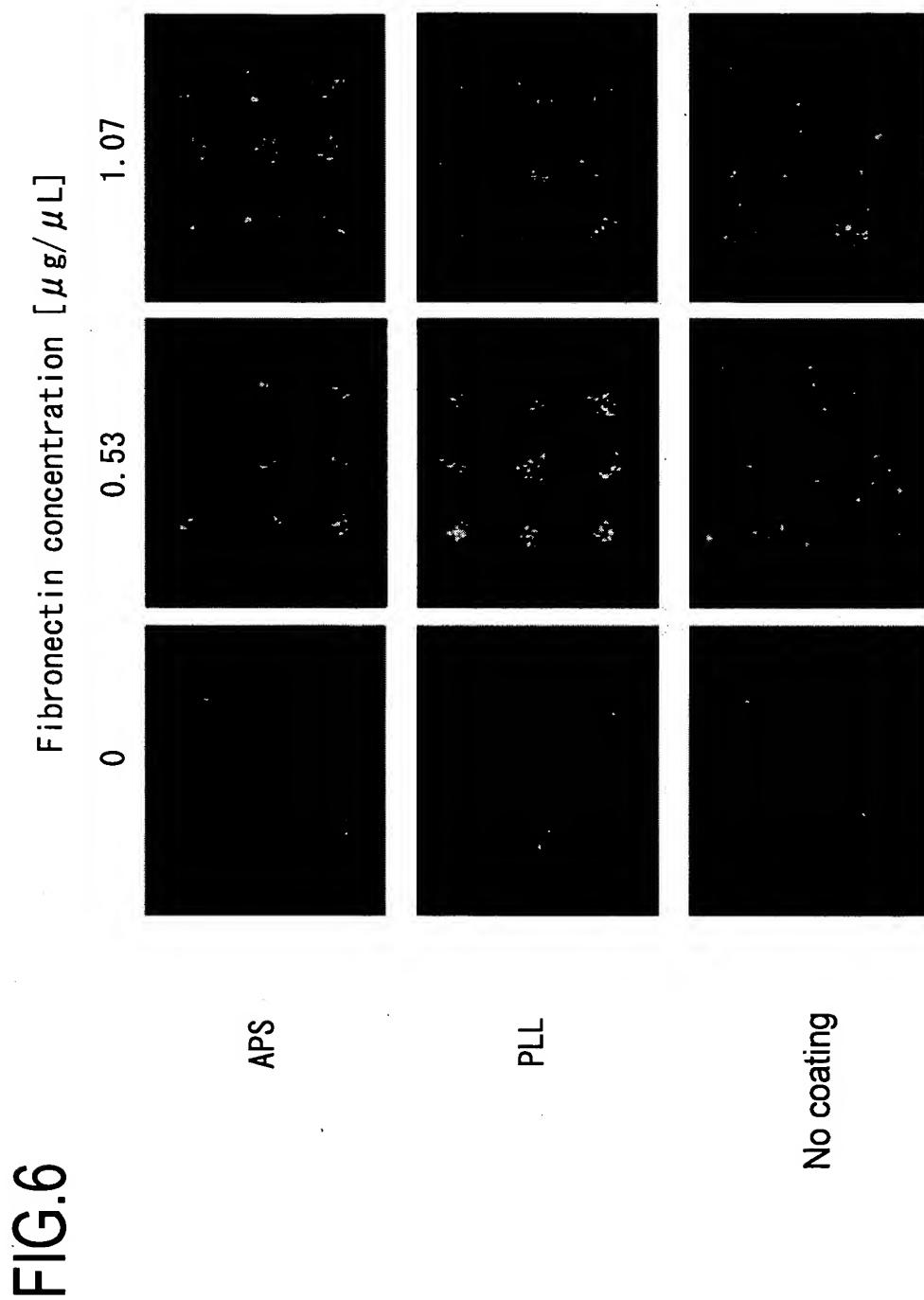


Fig. 7

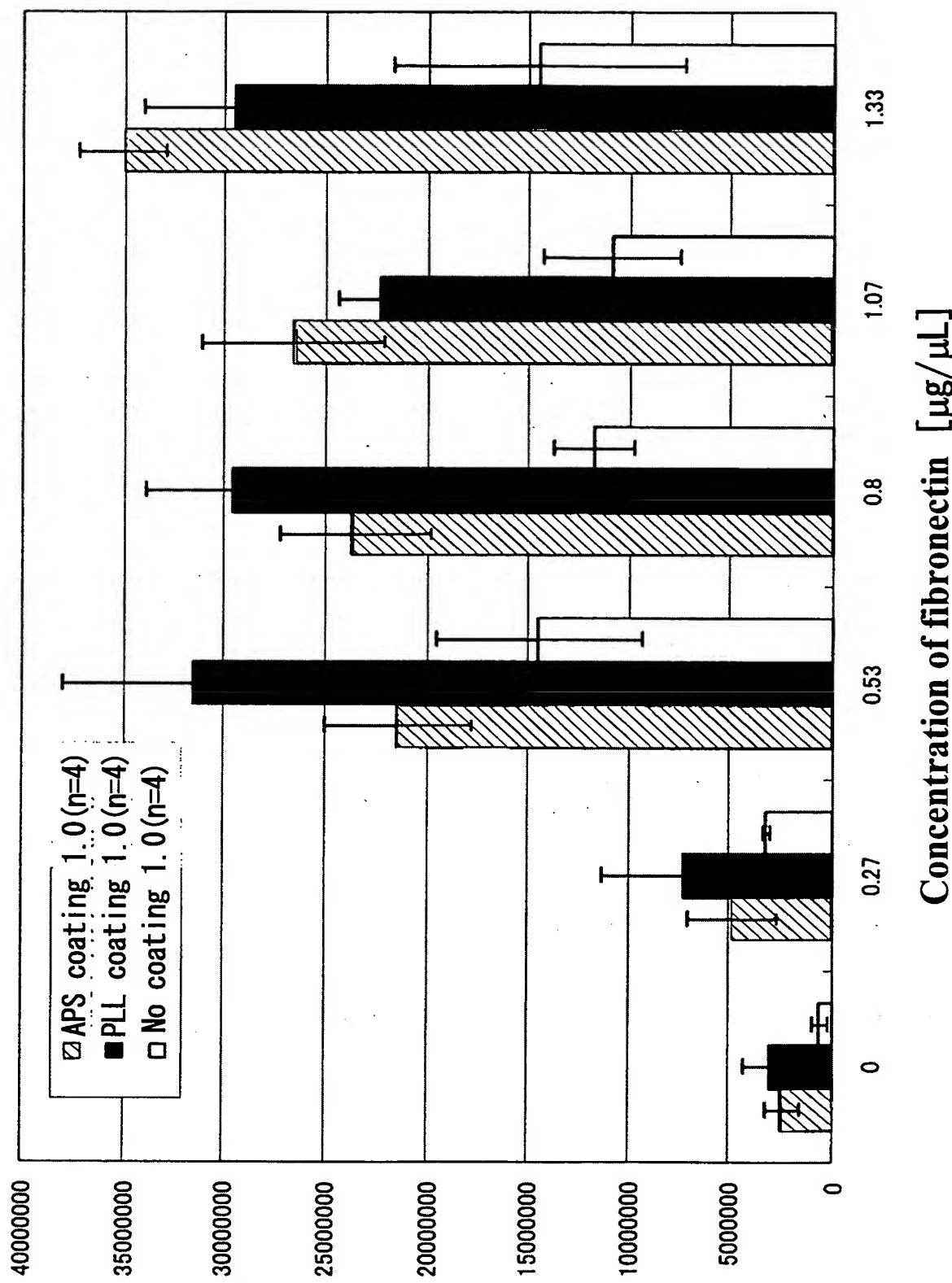
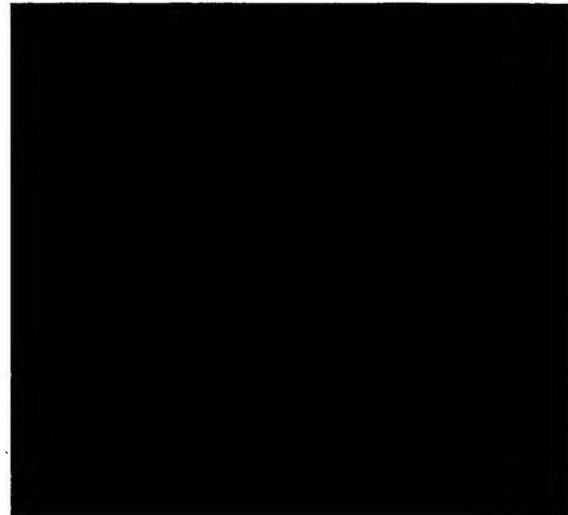
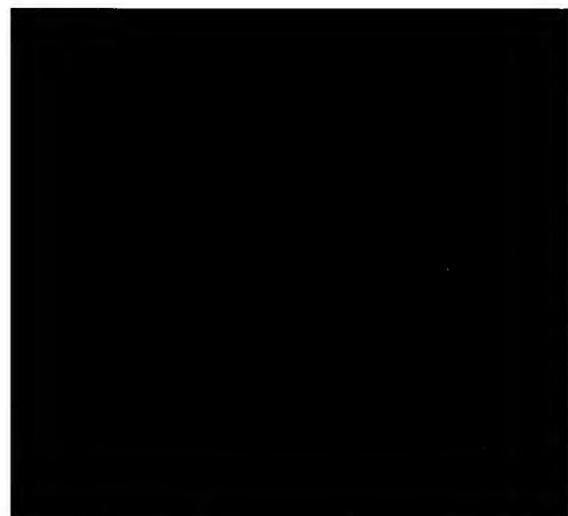


FIG.8



Fibronectin(-)



Fibronectin(+)

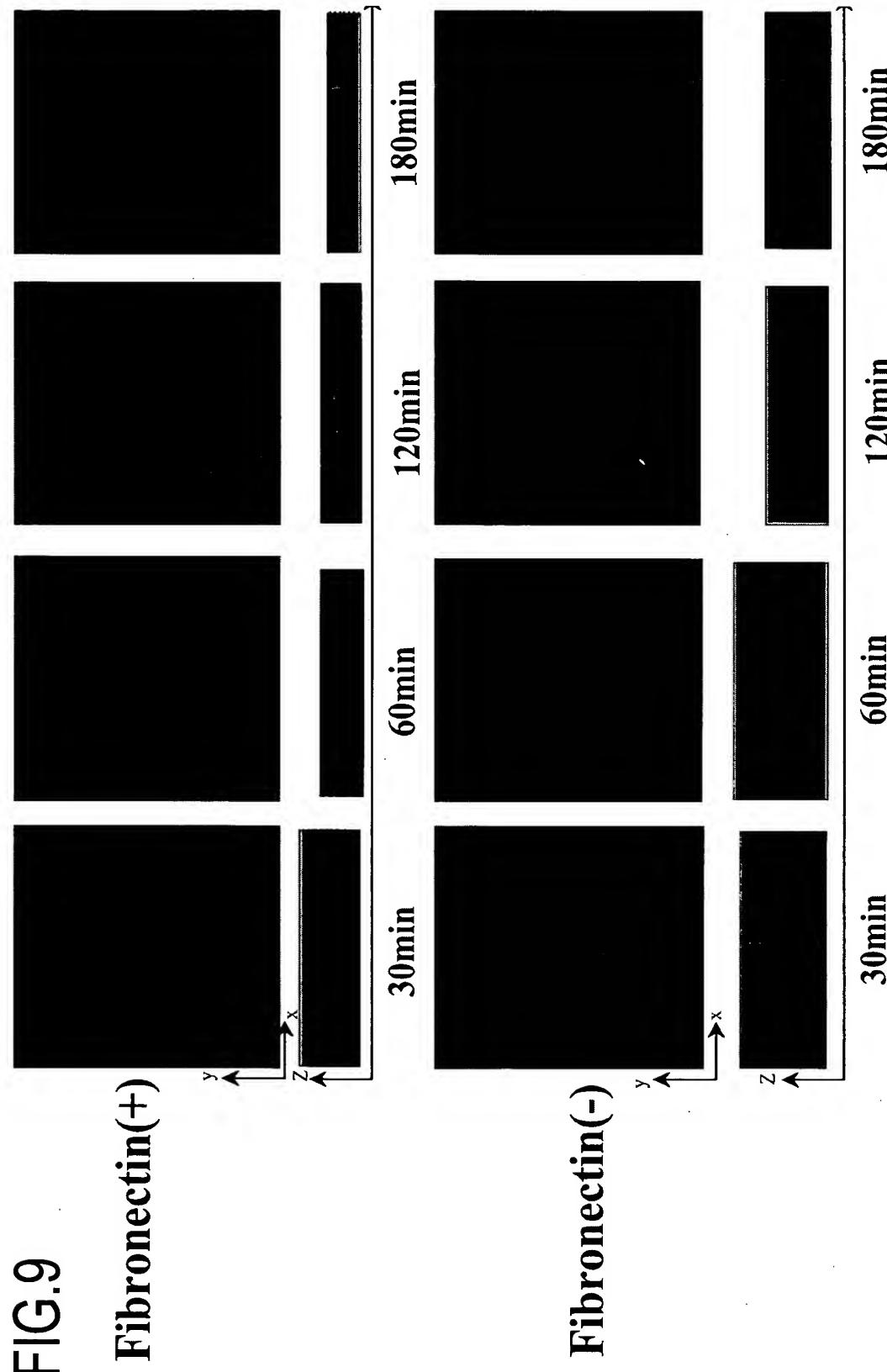


FIG.10

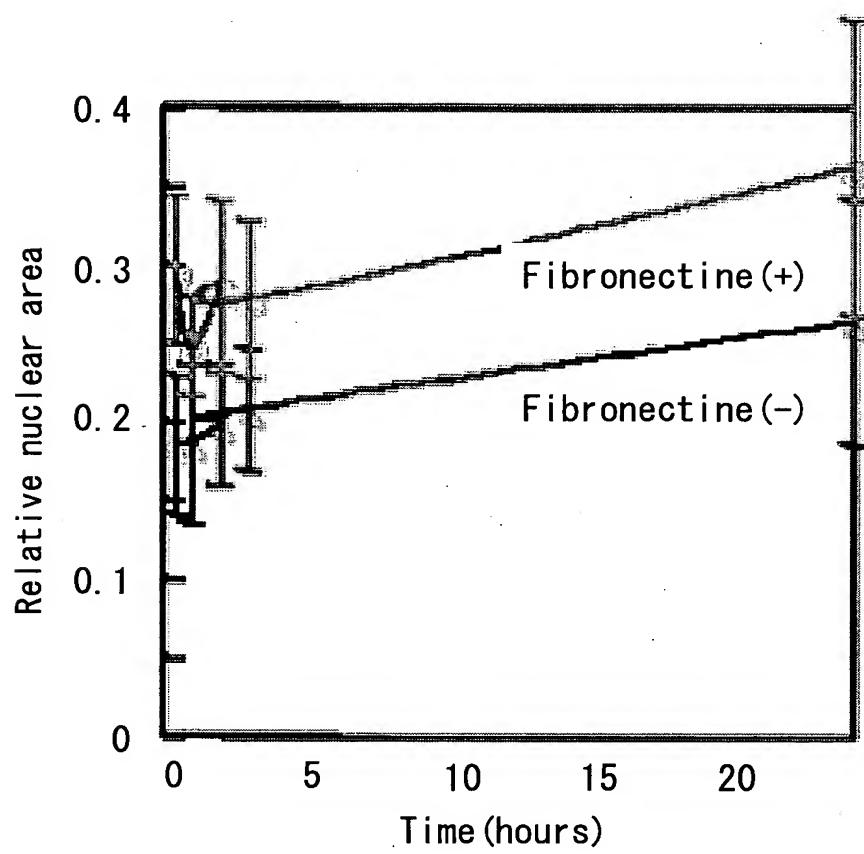


FIG.11

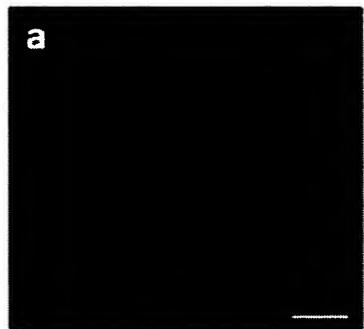
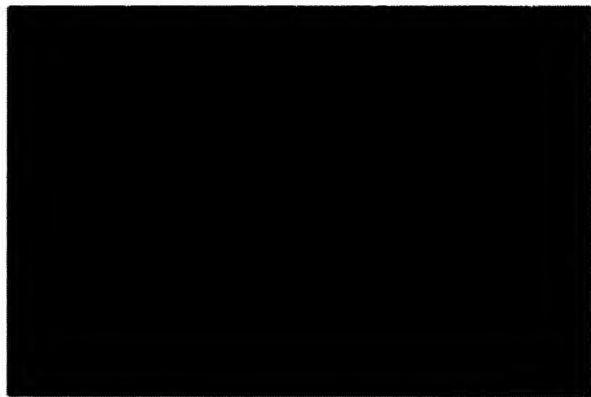


FIG.12



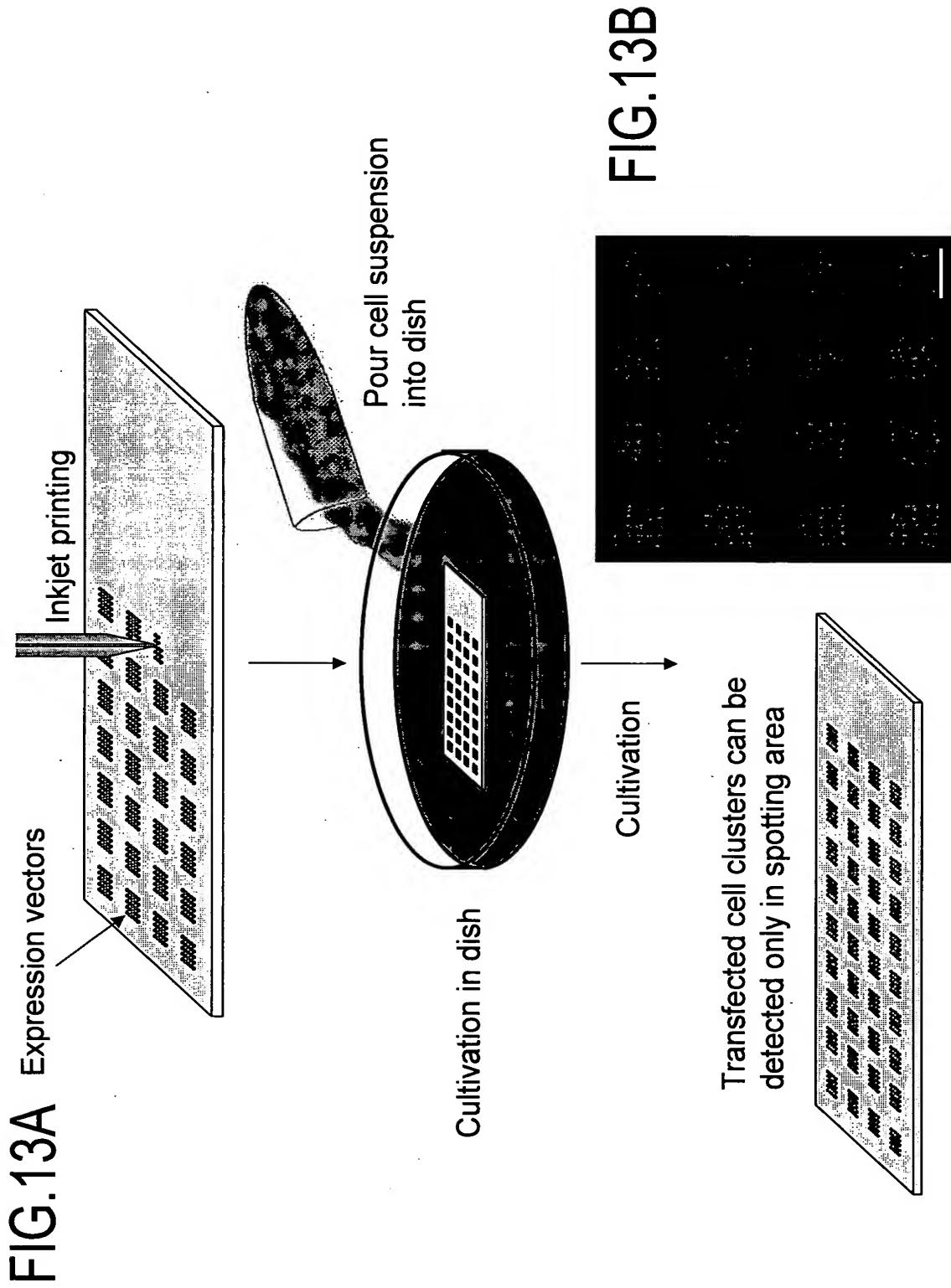


FIG.13C

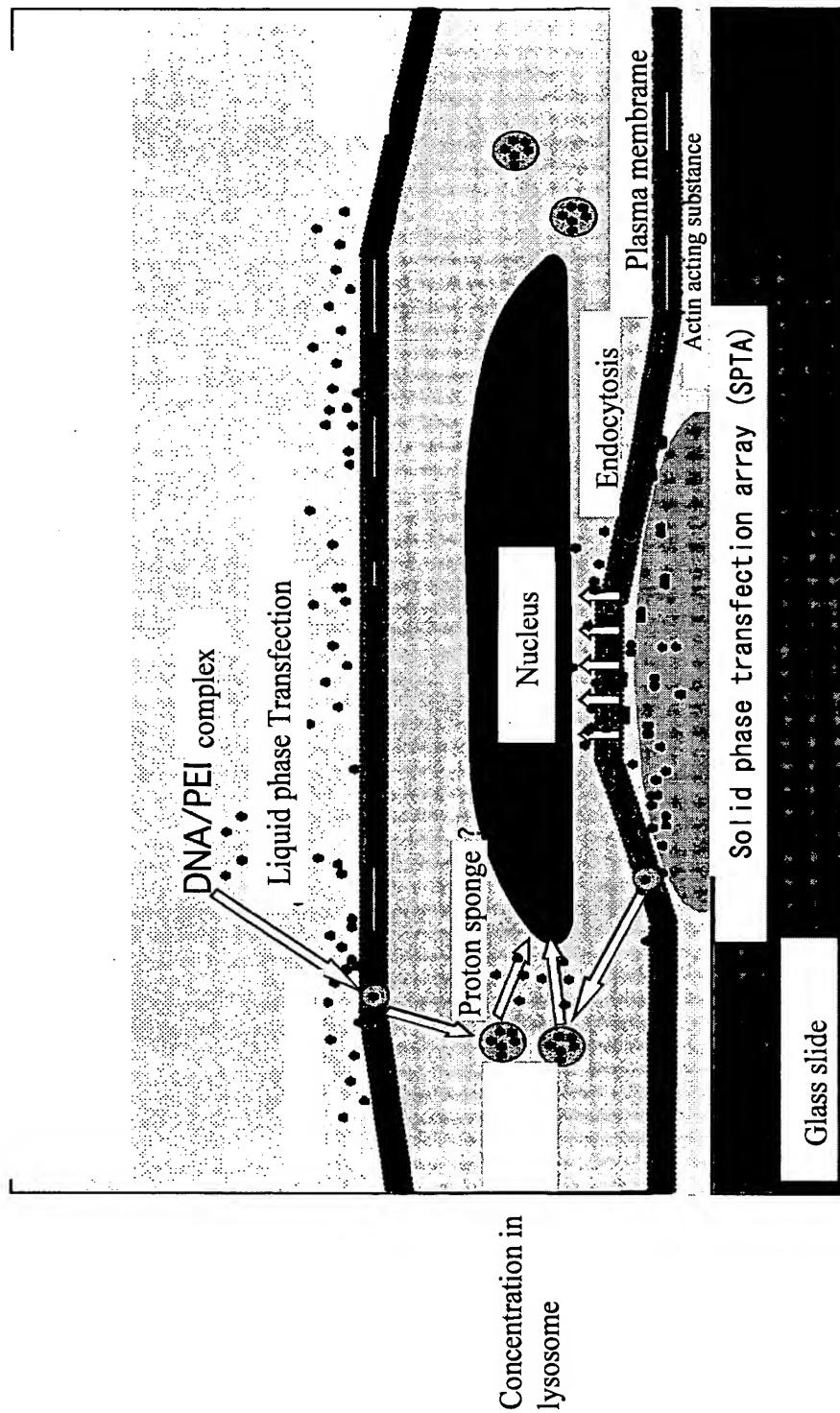


FIG. 14A

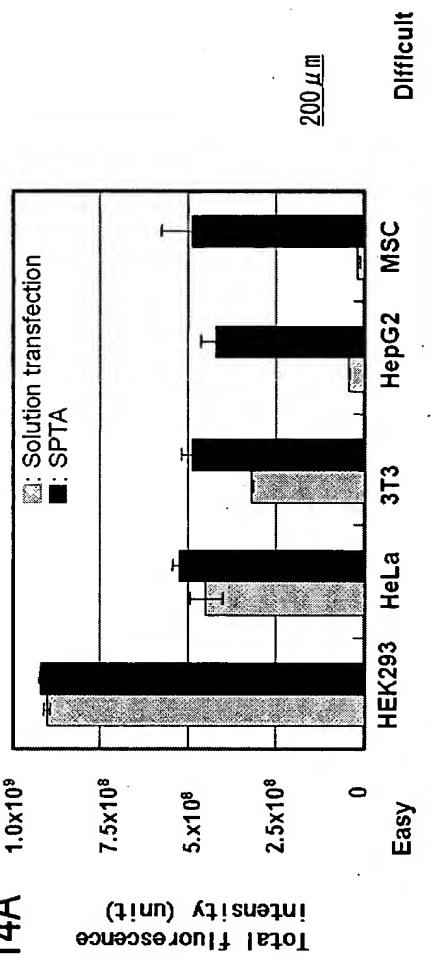


FIG. 14B
 Solution transfection

SPTA

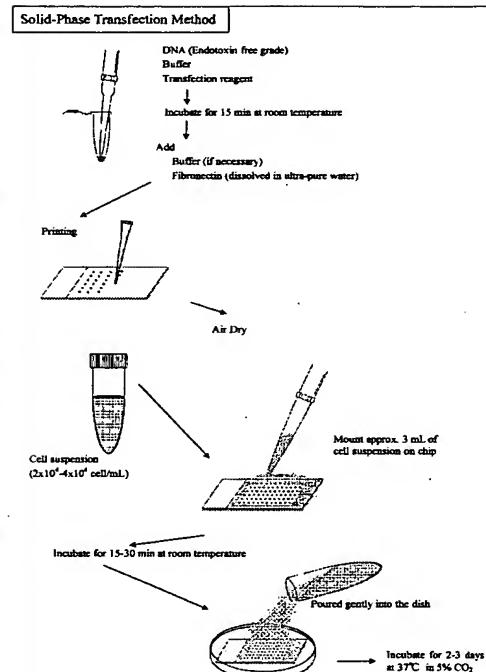
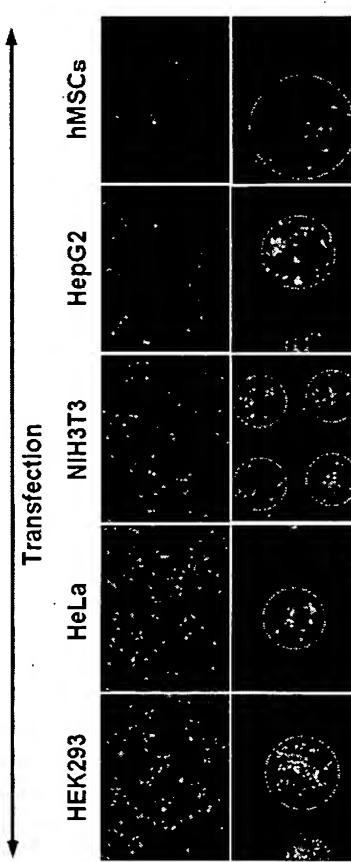


FIG.14D

For HEK293

DMEM (serum free)	9.5 uL
Plasmid DNA (1mg/mL)	1.5 uL
TransFast (1mg/mL)	9.0 uL
DMEM (serum free)	5.0 uL
Fibronectin (4mg/mL)	5.0 uL
Final volume	30.0 uL

Scheme for HEK293

1.5mL micro-tube
 ↓ ←DMEM
 ↓ ←Plasmid DNA
 mix Incubate for 2-3 days
 ↓ ←TransFast at 37°C in 5% CO₂
 mix completely and incubate for 15 min at RT
 ↓ ←DMEM
 ↓ ←Fibronectin
 mix completely
 ↓
 ready to print

For HeLa, NIH3T3-3, HepG2

DMEM (serum free)	14.5 uL
Plasmid DNA (1mg/mL)	1.5 uL
Lipofectamine2000	4.5 uL
DMEM (serum free)	5.0 uL
Fibronectin (4mg/mL)	5.0 uL
Final volume	30.0 uL

Scheme for HeLa, NIH3T3-3, and HepG2

1.5mL micro-tube
 ↓ ←DMEM
 ↓ ←Plasmid DNA
 mix
 ↓ ←Lipofectamine2000
 mix completely and incubate for 15 min at RT
 ↓ ←DMEM
 ↓ ←Fibronectin
 mix completely
 ↓
 ready to print

For hMSCs

	N/P=5	N/P=10	N/P=20
DMEM (serum free)	12.75	12.0	10.5 uL
Plasmid DNA (1mg/mL)	1.5	1.5	1.5 uL
JetPEI (x4) conc.	0.75	1.5	3.0 uL
Fibronectin (4mg/mL)	5.0	5.0	5.0 uL
Final volume	20.0	20.0	20.0 uL

Scheme for hMSCs

1.5mL micro-tube
 ↓ ←DMEM
 ↓ ←Plasmid DNA
 mix
 ↓ ←jetPEI
 mix completely and incubate for 15 min at RT
 ↓ ←Fibronectin
 mix completely
 ↓
 ready to print

FIG. 15A

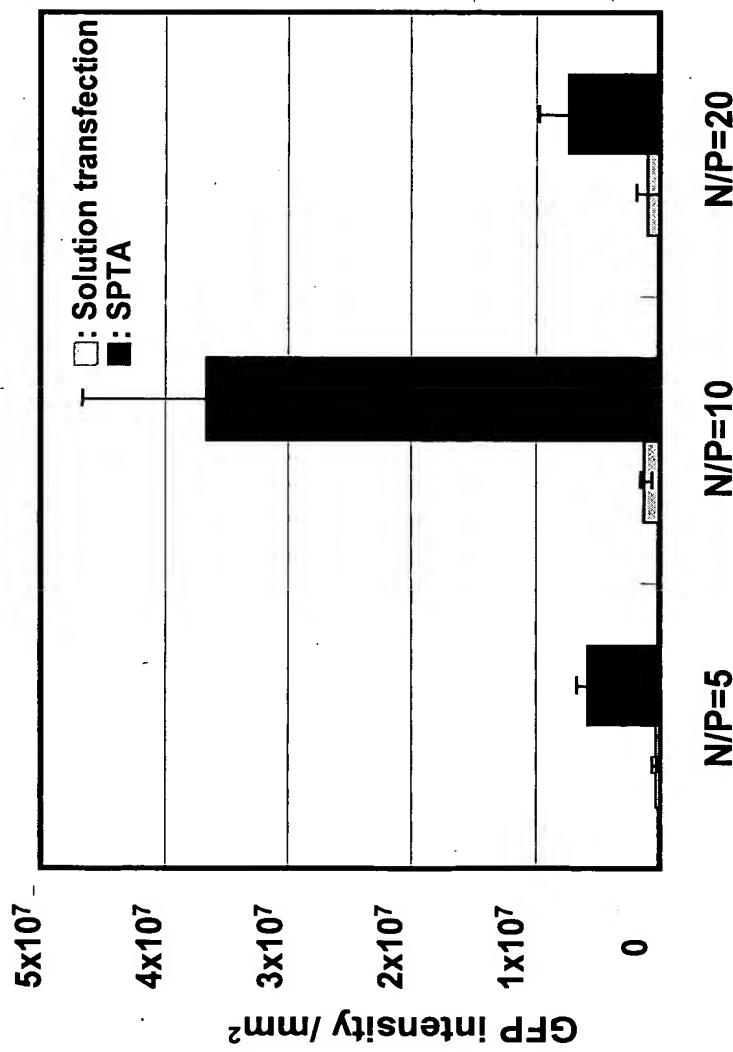
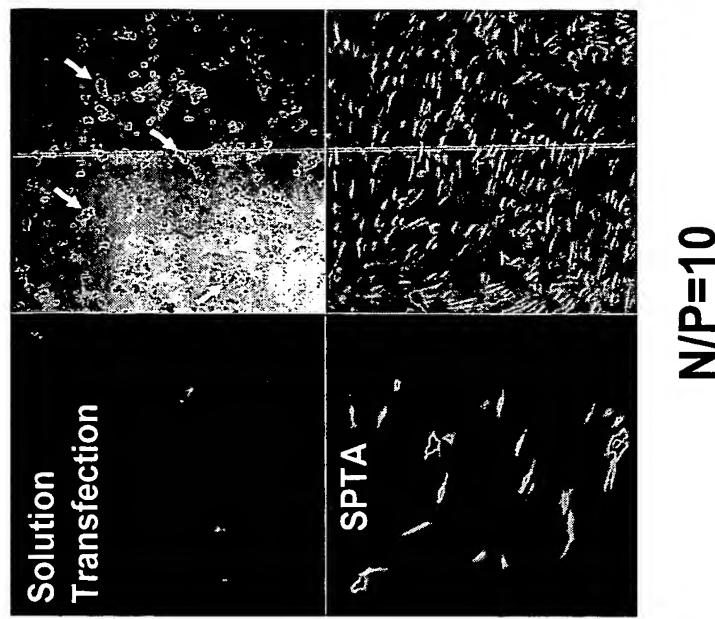


FIG. 15B



N/P=10

FIG.16B
FIG.16A

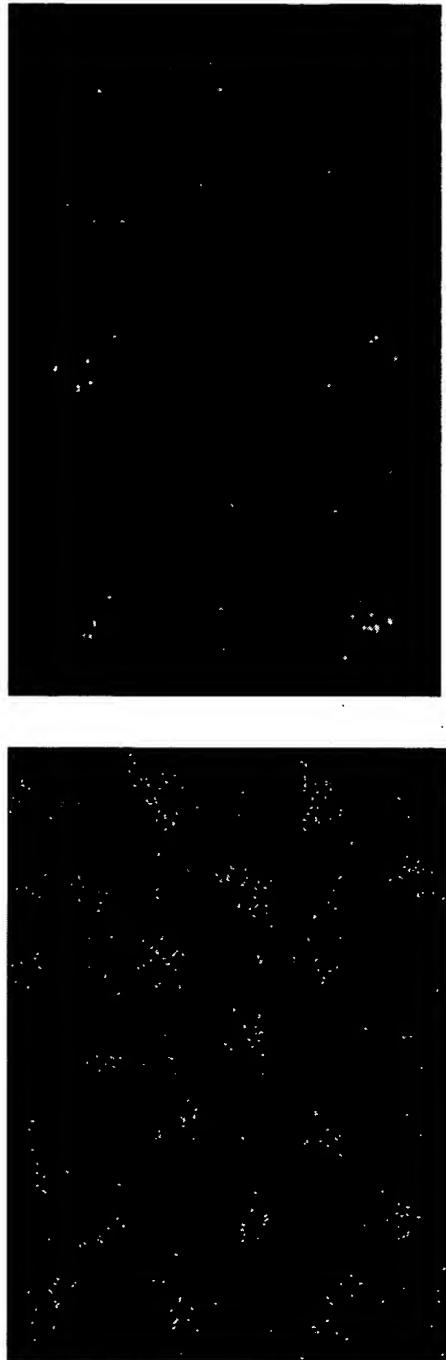


FIG.16C

Number of adherent cells		Time(min)					
		0	5	10	15	20	30
APS		235	220	202	157	170	162
APS+gelatin		212	206	184	145	156	183
APS+fibronectin		229	198	183	132	100	85
APS+pronectin L		257	170	126	94	71	47
PLL		231	221	205	162	168	159
PLL+gelatin		218	208	186	151	146	156
PLL+fibronectin		225	174	162	129	98	79
PLL+pronectin L		214	151	132	90	76	50
MAS		231	222	216	182	176	169
MAS+gelatin		224	198	182	163	159	162
MAS+fibronectin		218	182	169	143	112	86
MAS+pronectin L		220	176	152	124	101	66
No coating		226	216	208	192	183	164

Cell adhesion rate (proportion of adherent cells (%))		Time(min)					
		0	5	10	15	20	30
APS		0	6.382979	14.04255	33.19149	27.65957	31.06383
APS+gelatin		0	2.830189	13.20755	31.60377	26.41509	13.67925
APS+fibronectin		0	13.53712	20.08734	42.35808	56.33188	62.8821
APS+pronectin L		0	33.85214	50.97276	63.42412	72.37354	81.71206
PLL		0	4.329004	11.25541	29.87013	27.27273	31.16883
PLL+gelatin		0	4.587156	14.6789	30.73394	33.02752	28.44037
PLL+fibronectin		0	22.66667	28	42.66667	56.44444	64.88889
PLL+pronectin L		0	29.43925	38.31776	57.94393	64.48598	76.63551
MAS		0	3.896104	6.493506	21.21212	23.80952	26.83983
MAS+gelatin		0	11.60714	18.75	27.23214	29.01786	27.67857
MAS+fibronectin		0	16.51376	22.47706	34.40367	48.62385	60.55046
MAS+pronectin L		0	20	30.90909	43.63636	54.09091	70
No coating		0	4.424779	7.964602	15.04425	19.02655	27.43363

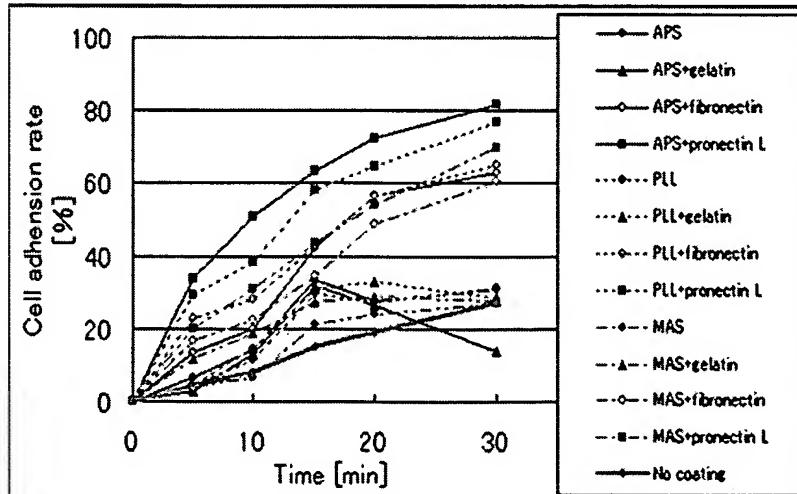
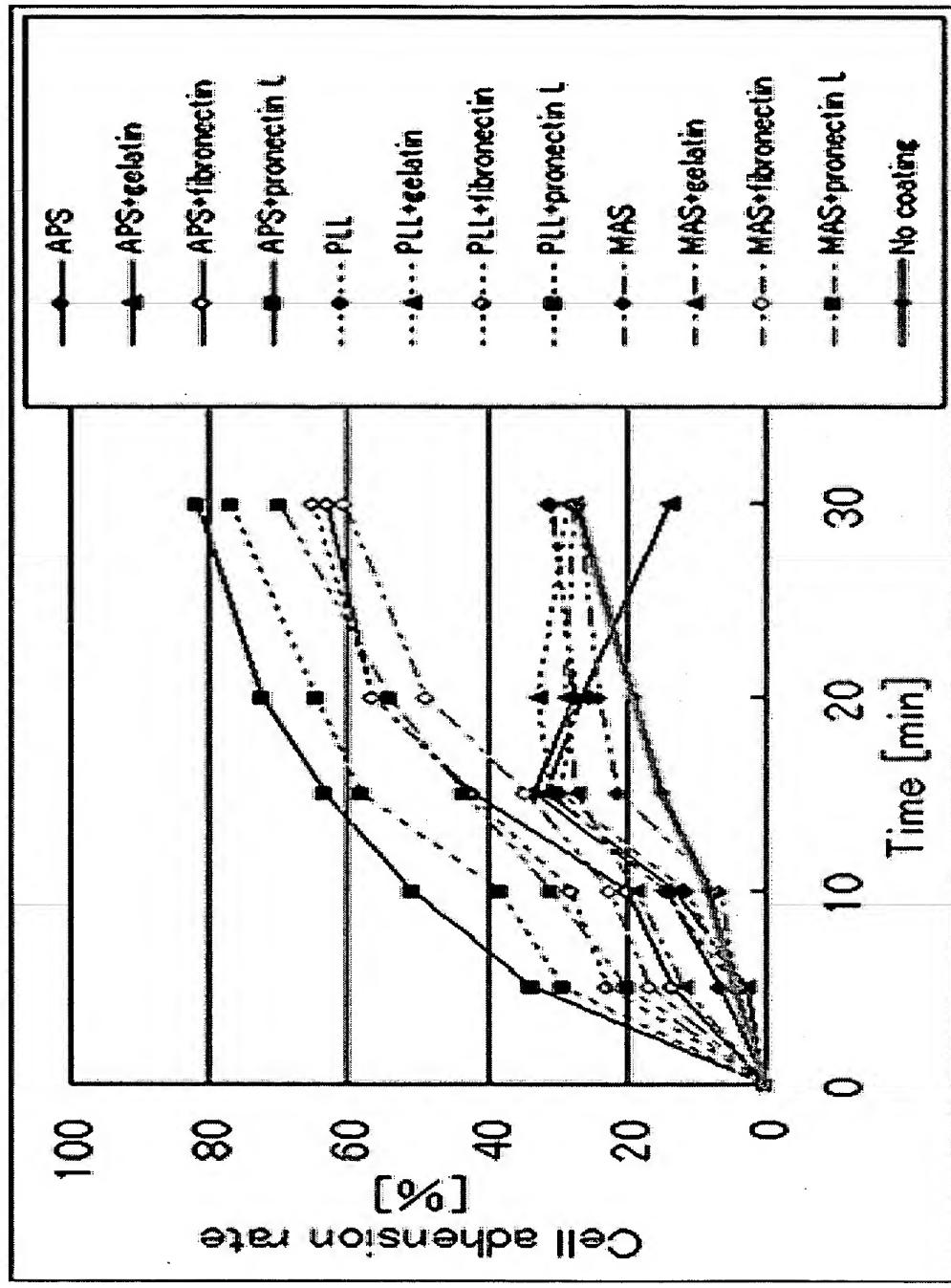


FIG. 16D



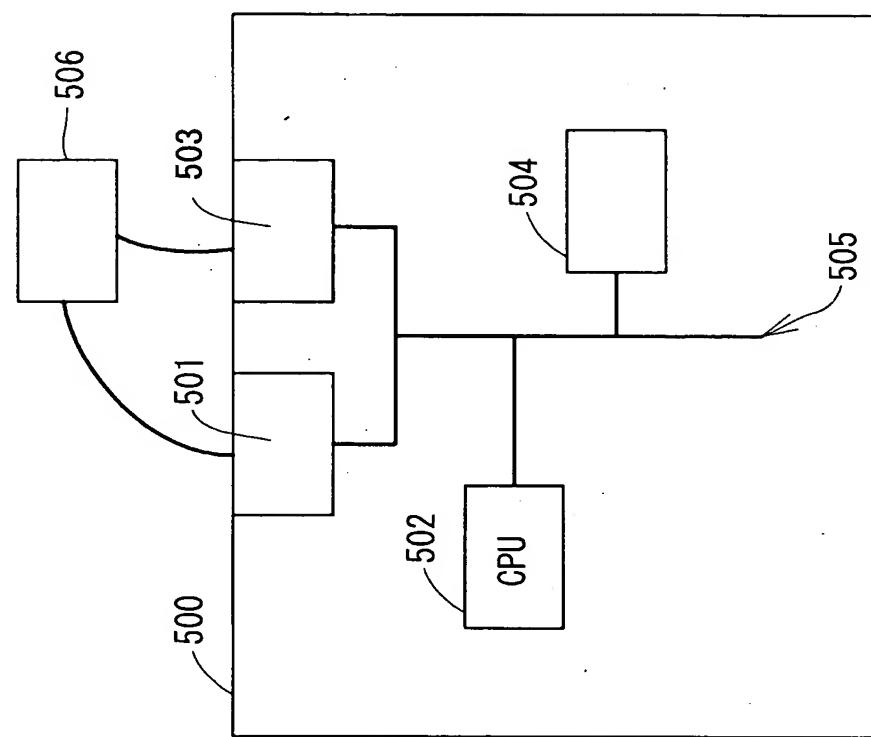
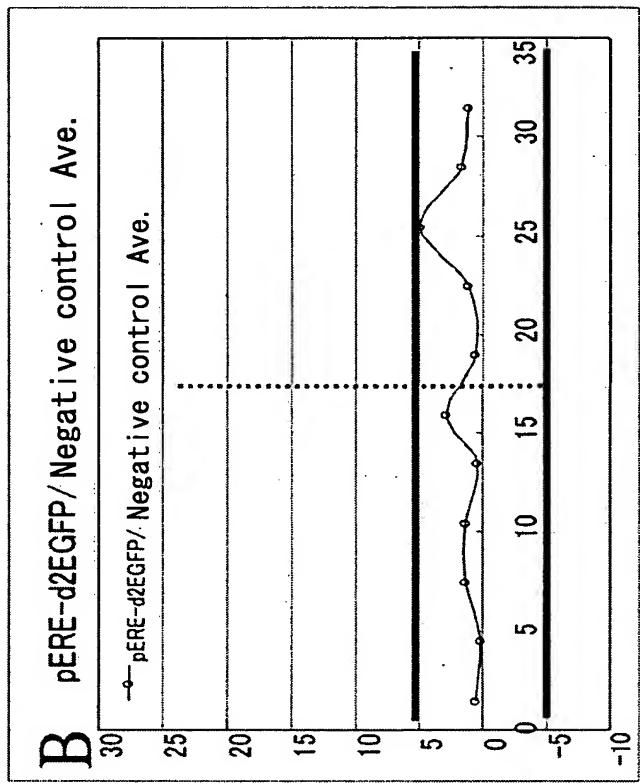
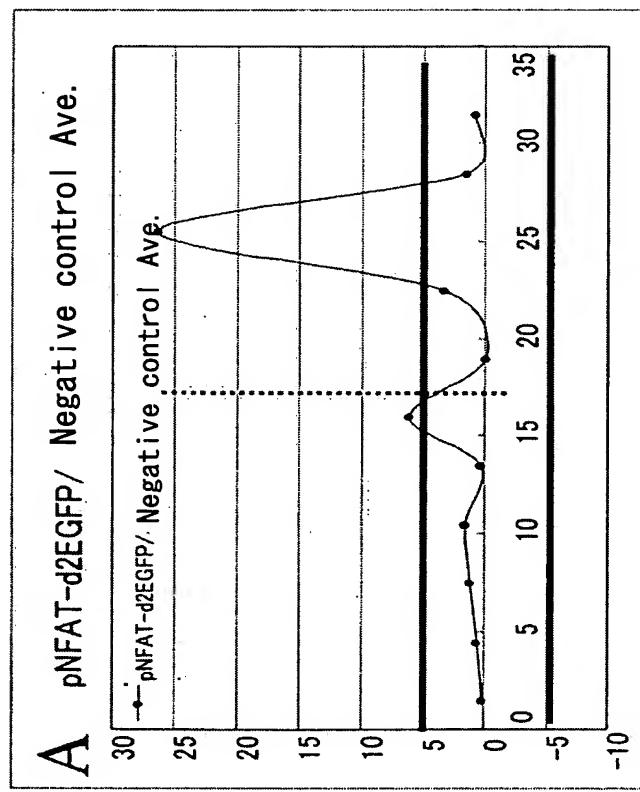
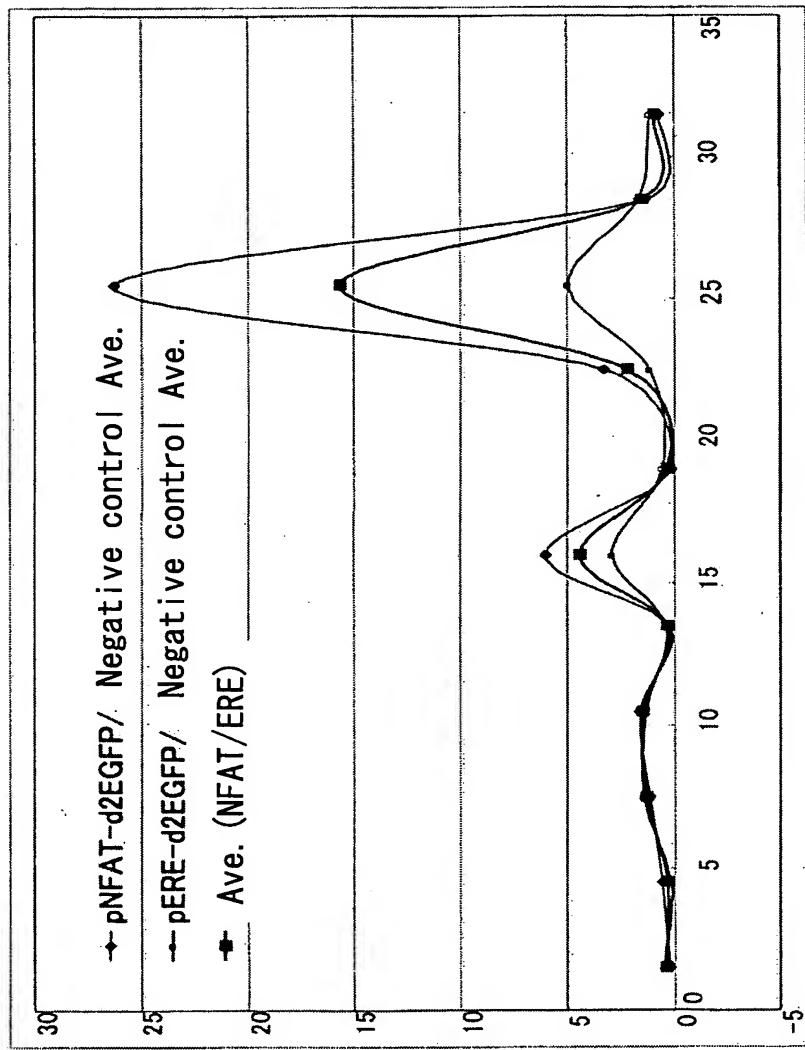


FIG.17

FIG. 18A

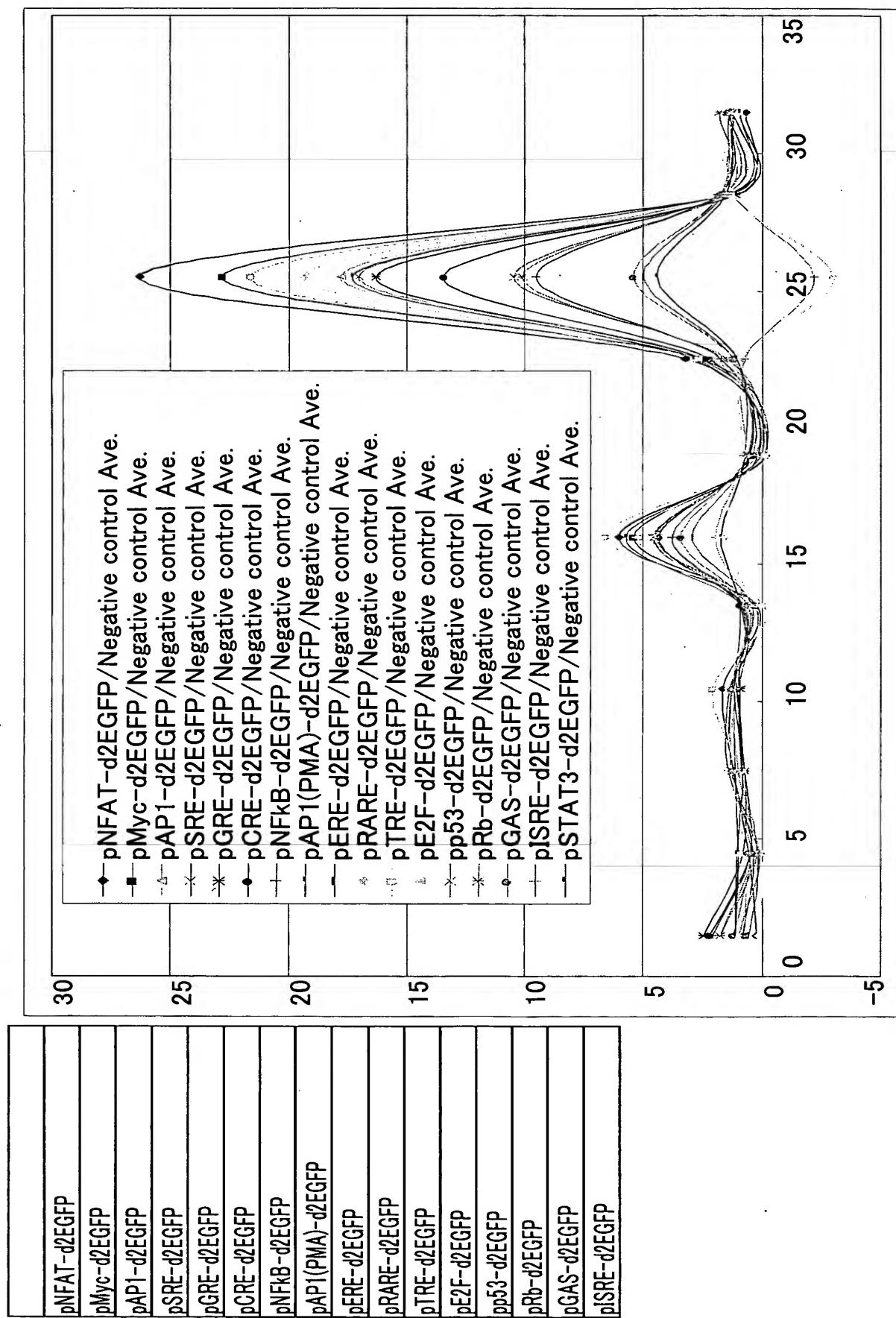


	0-31.5 hr	17.5-31.5 hr	0-17.5 hr
A	+	+	+
B	+	+	-



	0-31.5 hr	17.5-31.5 hr	0-17.5 hr
NFAT	+	+	+
ERE	+	-	-
NFAT/ERE	+	+	-

FIG. 18B



Th=5	Day0-1	0-31.5	0-17.5	17.5-31.5
	Induction of differentiation			
	Extraction number=1	82.35284	29.41176	82.35294
	Extraction number=2	70.58824	41.17647	88.23529
	Extraction number=3	88.23529	29.41176	94.11765
	Extraction number=5	94.11765	11.76471	94.11765
	Extraction number=8	100	5.882353	100
	Extraction number=16	100	0	100
	Extraction number=17	100	0	100

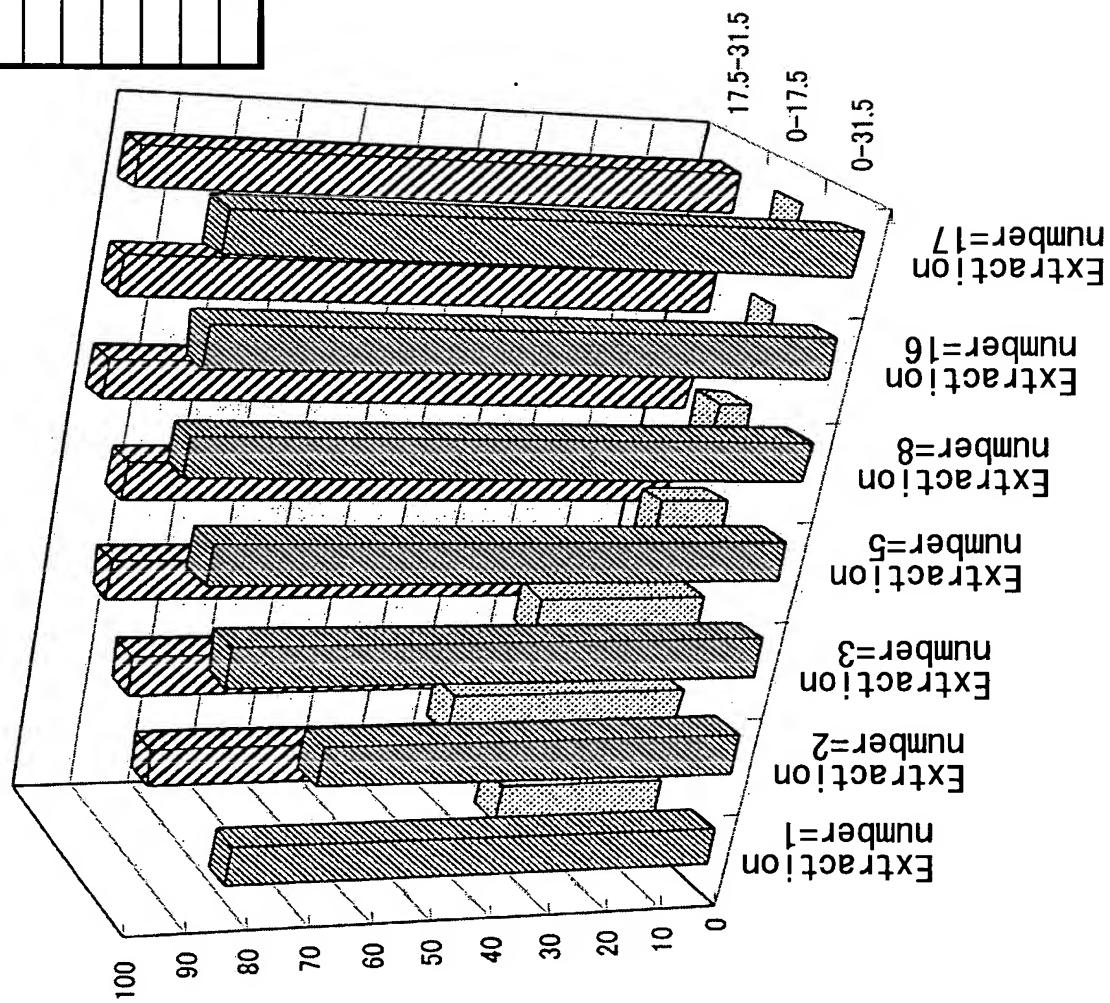


FIG.20

FIG.21

No induction of differentiation	0-31.5	0-17.5	17.5-31.5
Extraction number=1	5.882353	5.882353	0
Extraction number=2	0	0	0
Extraction number=3	0	0	0
Extraction number=5	0	0	0
Extraction number=8	0	0	0
Extraction number=16	0	0	0
Extraction number=17	0	0	0

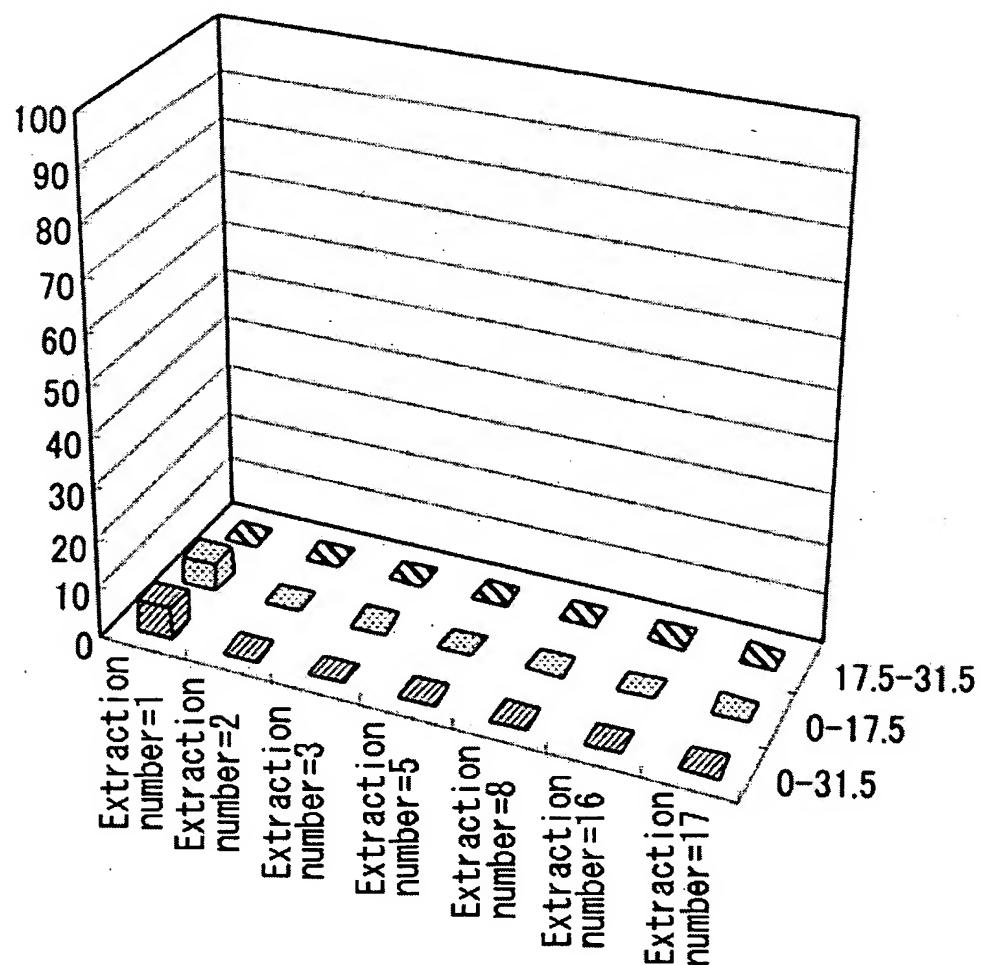


FIG.22 Cell function and cocktail party process

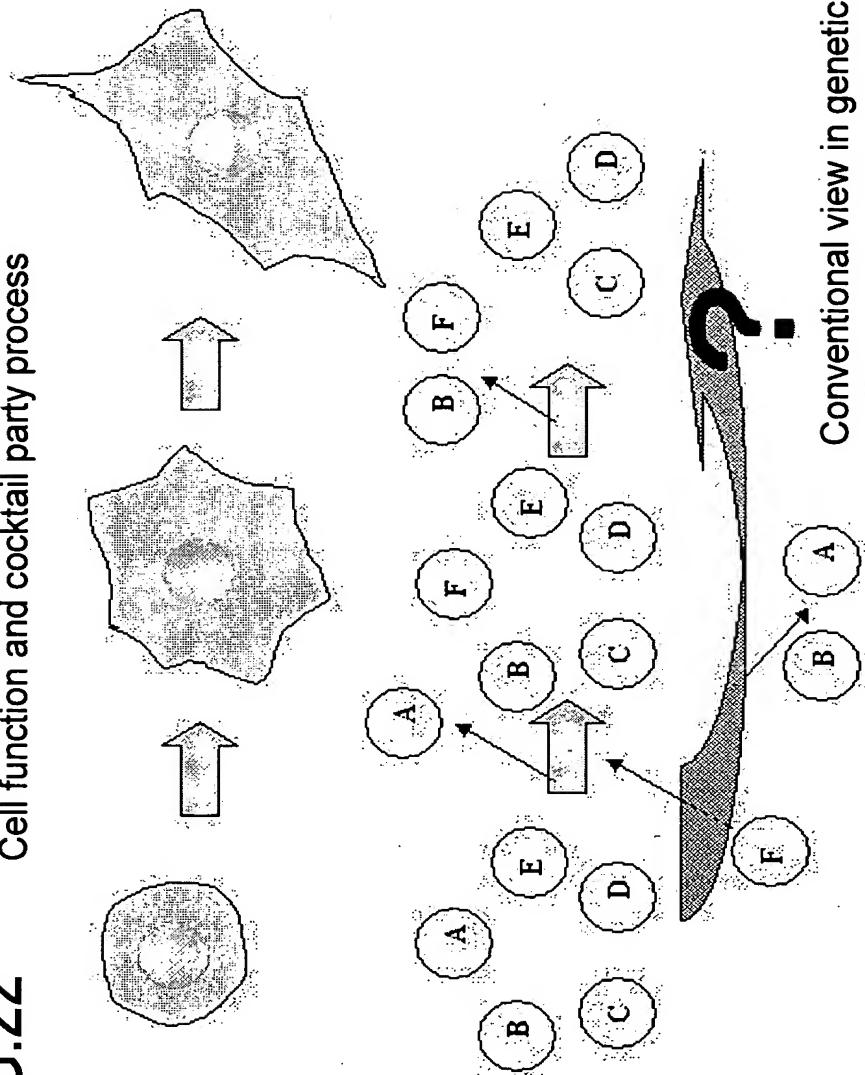
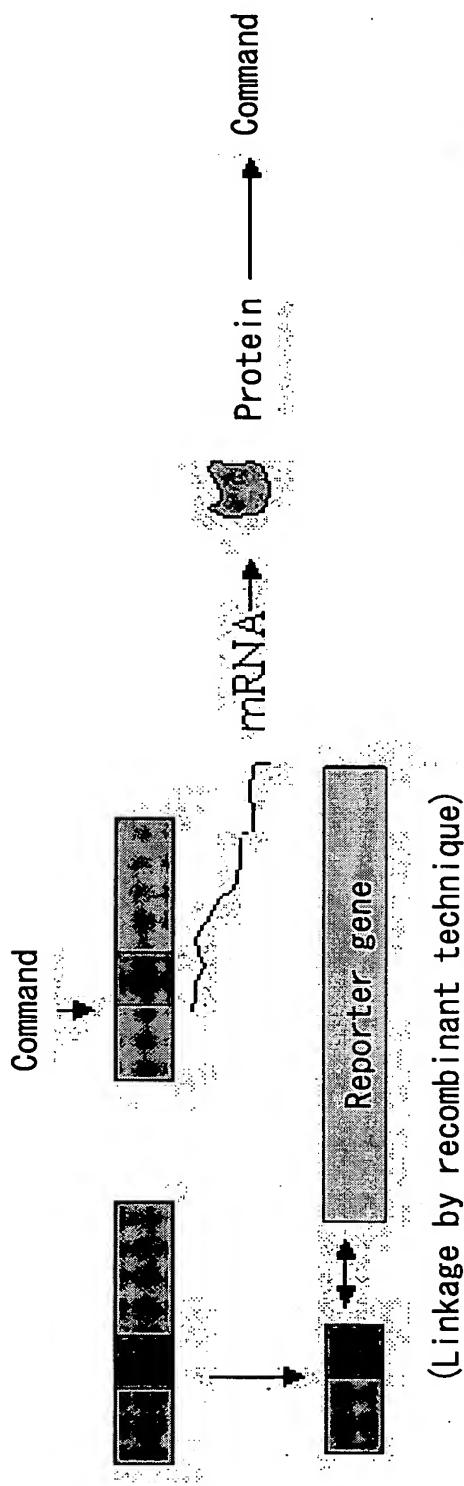


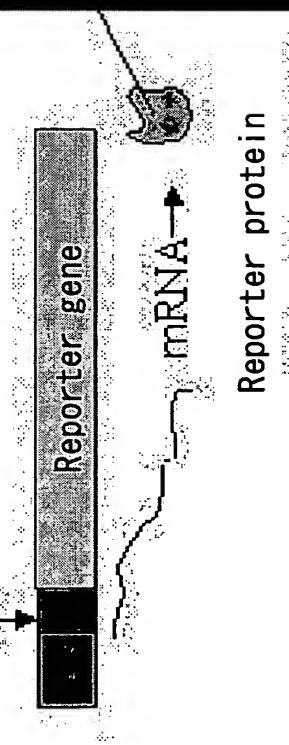
FIG.23

Reporter for gene transcription switching



(Linkage by recombinant technique)

Command



Green fluorescence

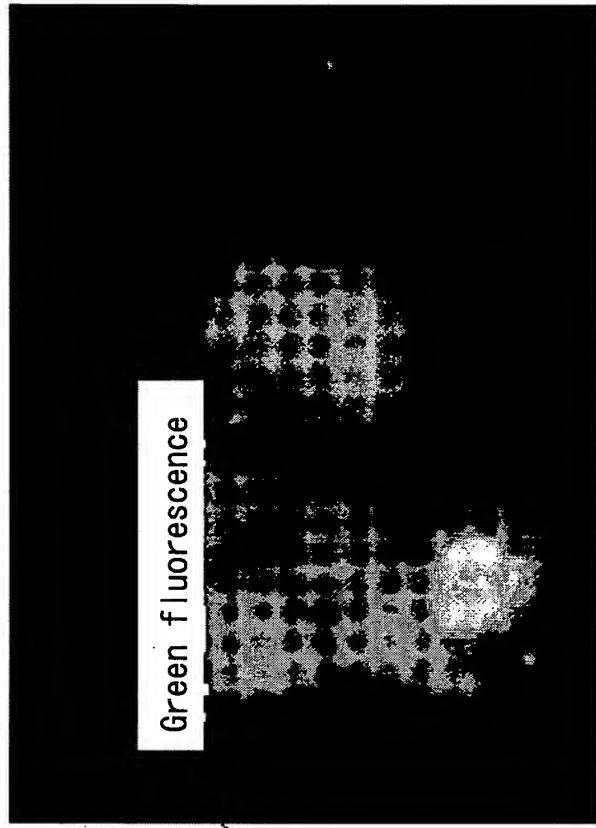


FIG.24

Construction of transcription factor reporter

Vector	Pathway	Transcription factor	Cis-acting enhancer element
pNFkB-d2FGFP	IKK/NFkB	NFkB	kB
pAP1-d2FGFP	SAPK/JNK	c-Jun, c-Fos	AP1
pSRF-d2FGFP	MAPK/JNK, MAPK/FRK	Flk-1,STAT, TCF,SRF	SRF
pGRF-d2FGFP	Glicocorticoide (HXP90 mediation)	GR	GRF
pCRF-d2FGFP	PKA/CRFB,JNK/p38 PKA	ATF2/CRFB	CRF
pMpc-TA-d2FGFP, pMYC-d2FGFP	Cell cycle	c-myc	F-box
pHSF-d2FGFP	HSF	HSF	HSF
pNFAT-d2FGFP	NFAT/Calcineurin/PKC	NFAT	NFAT
pAP1(PMA)-TA-d2FGFP	PKC		AP1(PMA)
pRb-TA-d2FGFP	Cell cycle		Rb
pF2F-TA-d2FGFP	Cell cycle		F2F
pp53-TA-d2FGFP	Cell cycle apoptosis		P53
pGAN-TA-d2FGFP	JAK/STAT	STAT1/STAT1	GAS
pISRF-TA-d2FGFP	JAK/STAT	STAT2/STAT1	ISRF
pSTAT3-TA-d2FGFP	JAK/STAT	STAT3/STAT3	STAT3
pFRF-TA-d2FGFP	Estrogen receptor		FRF
pRARF-TA-d2FGFP	Retinoic acid		RARF
pTRF-TA-d2FGFP	Thyroid receptor		TRF

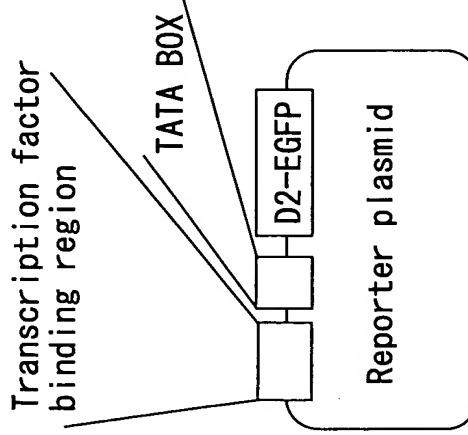


FIG.25
Transcription factor reporter

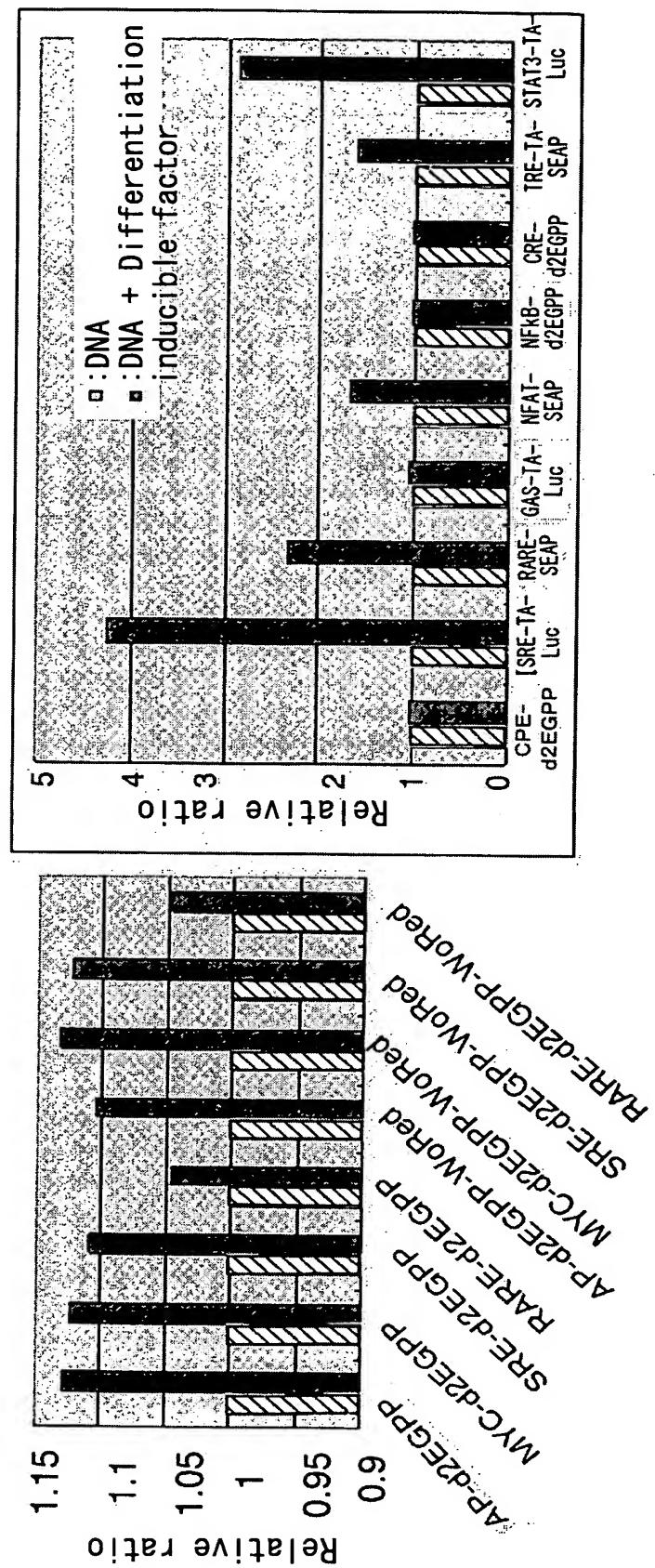
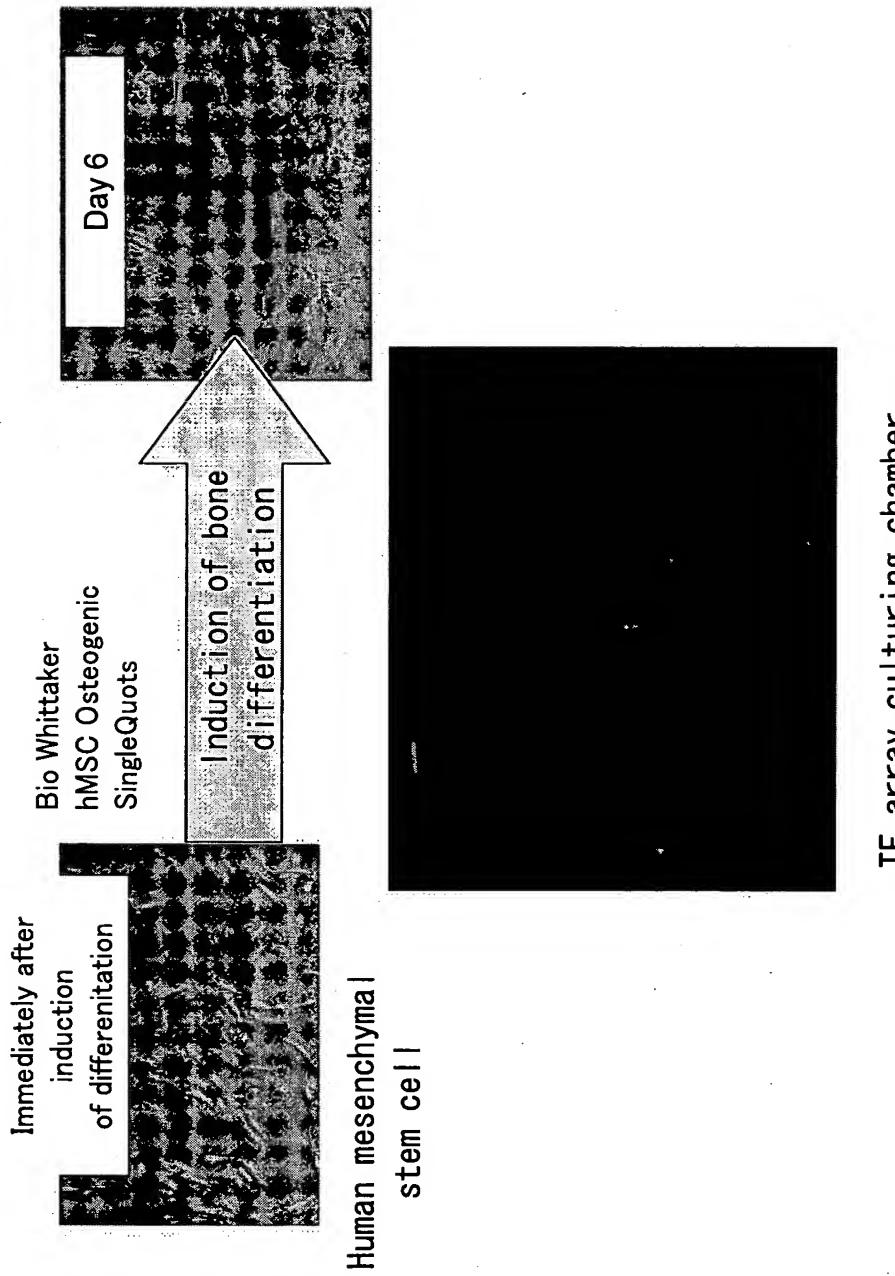


FIG.26 Measurements in a time-series manner of transcriptional activity in the bone differentiation process



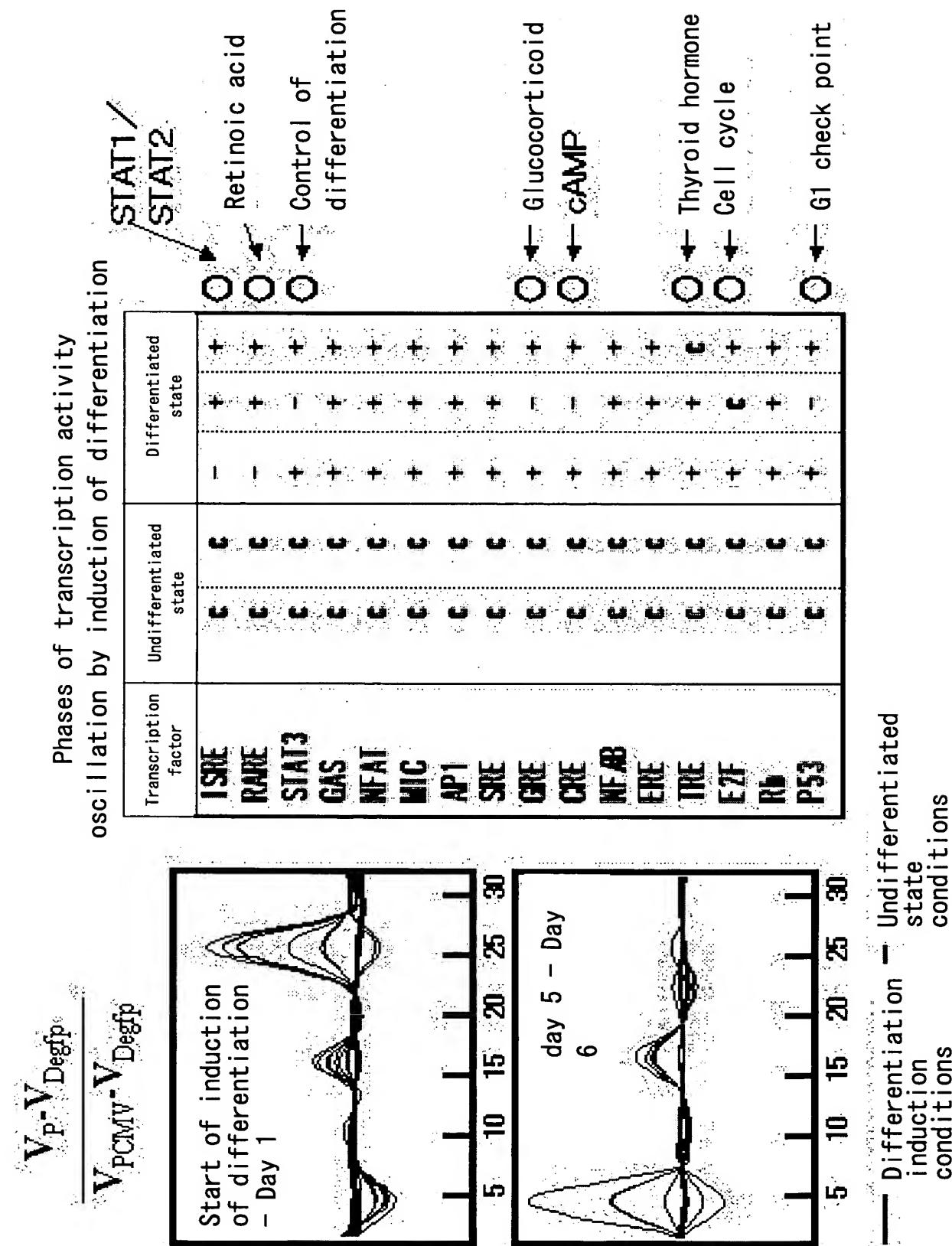
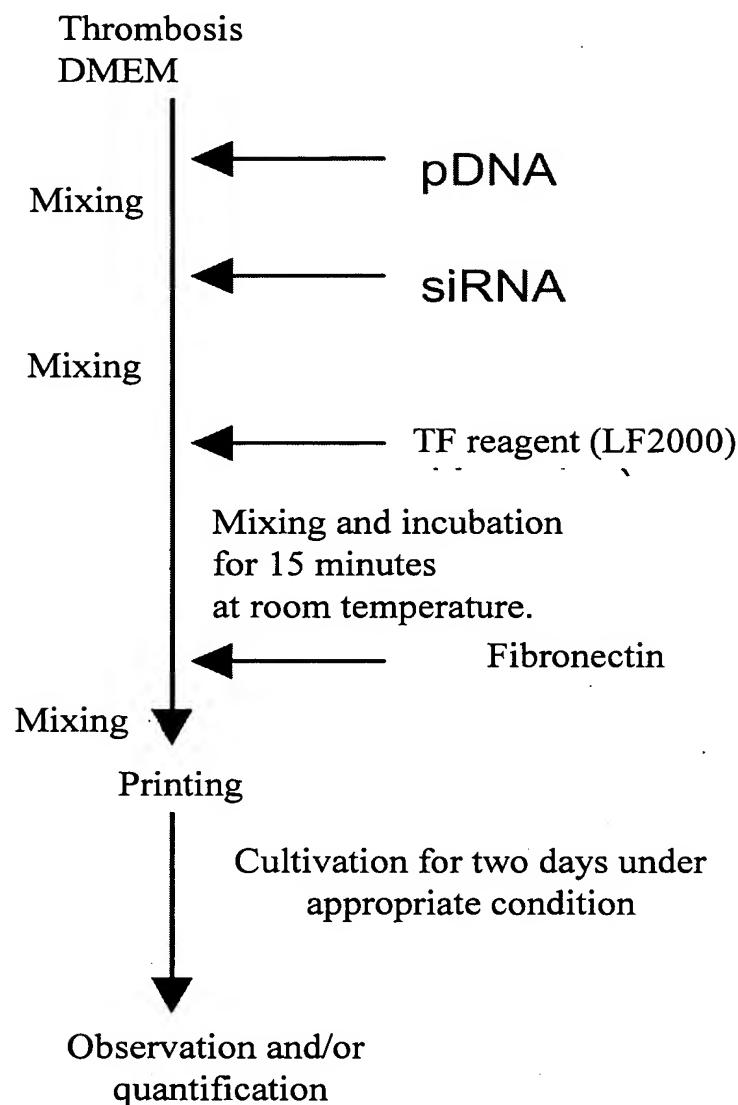


FIG.28



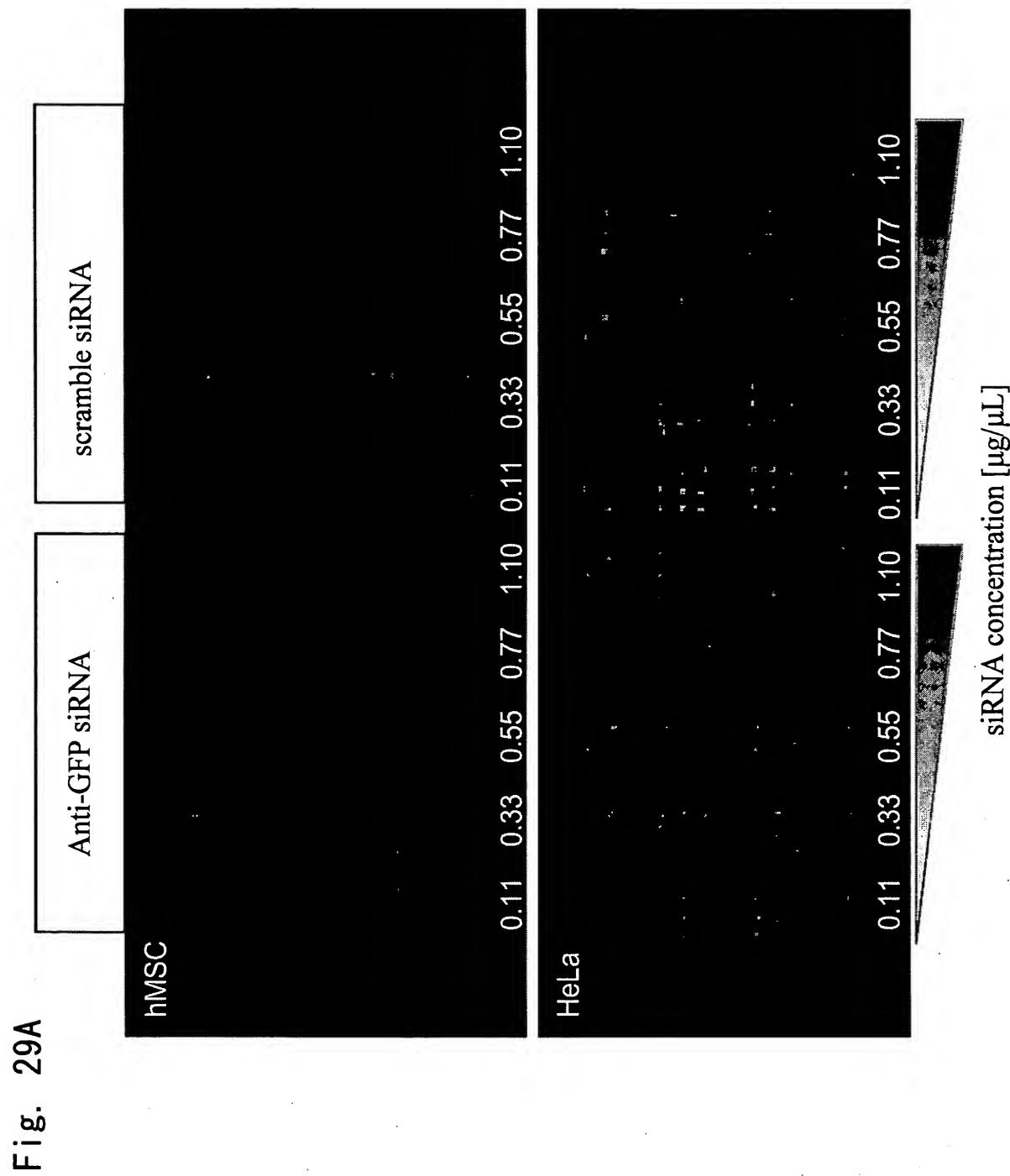


Fig. 29B

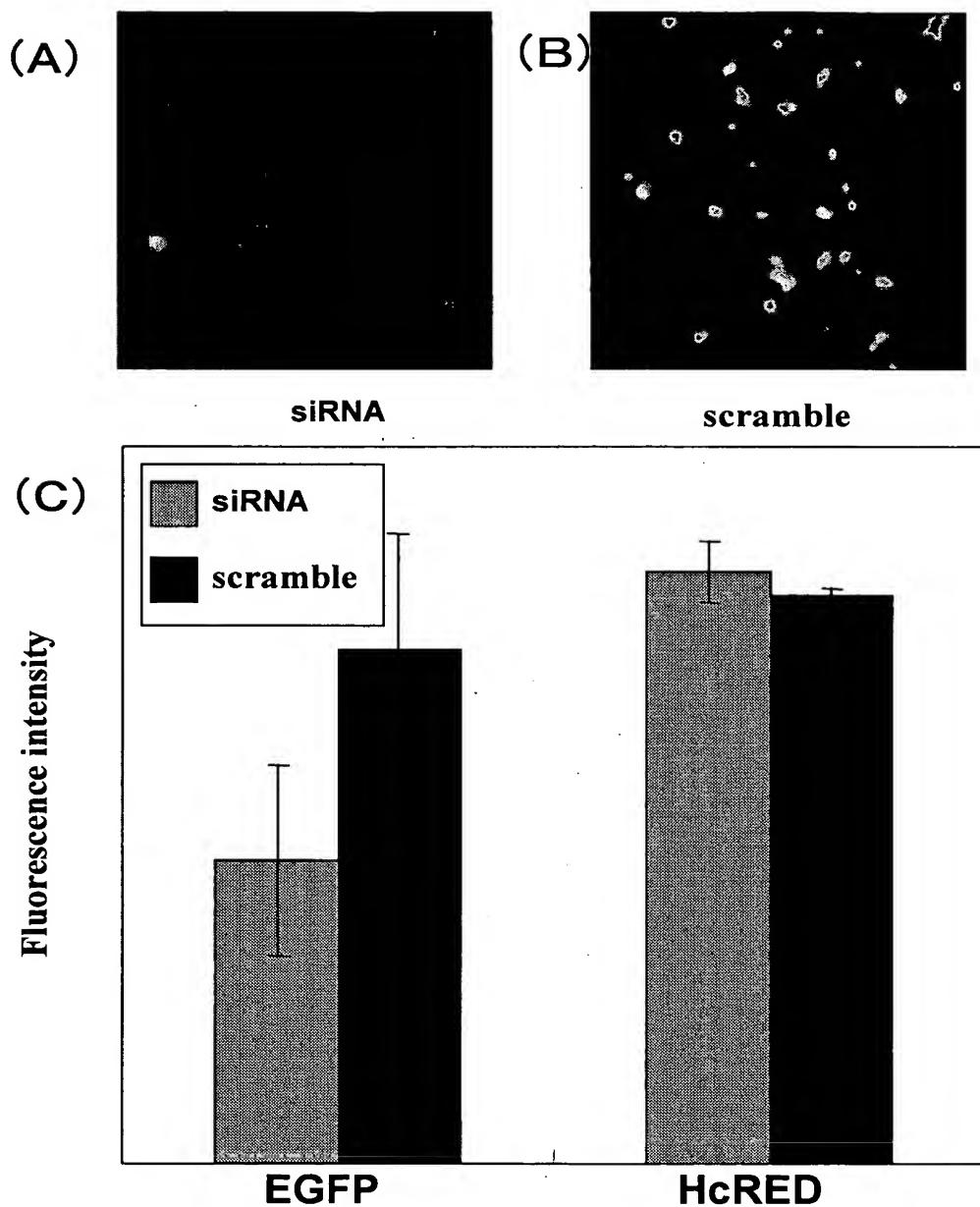


Fig. 29C

Cell-based RNAi assay by Transfection MicroArray™

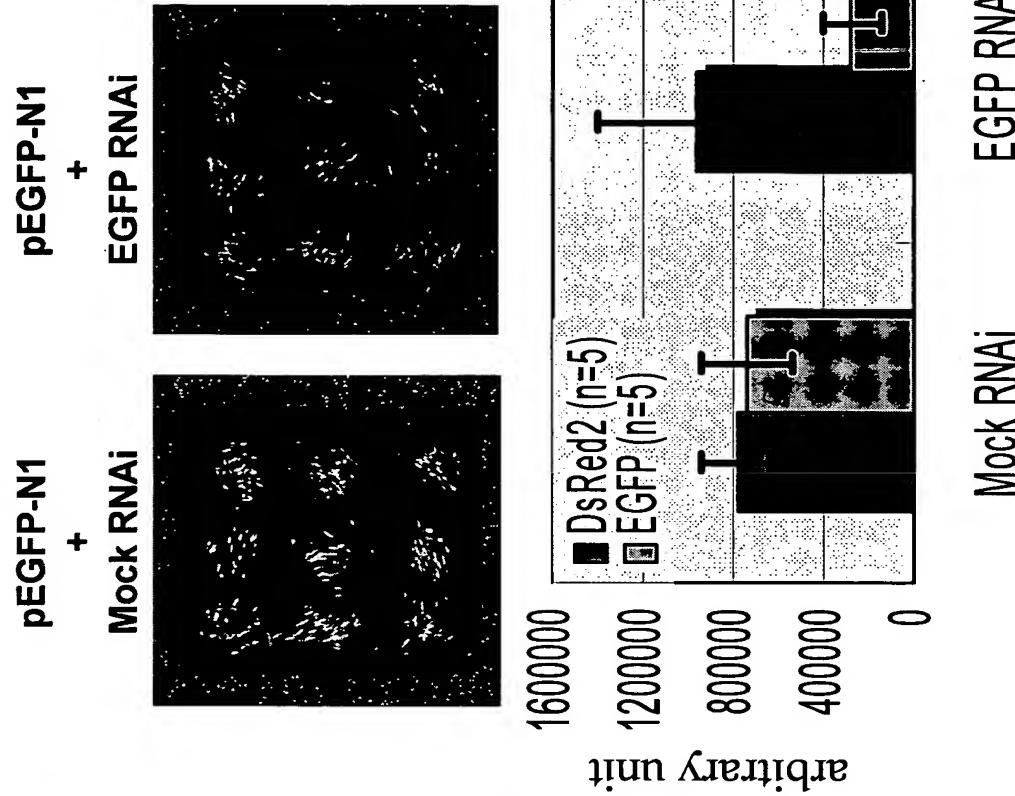
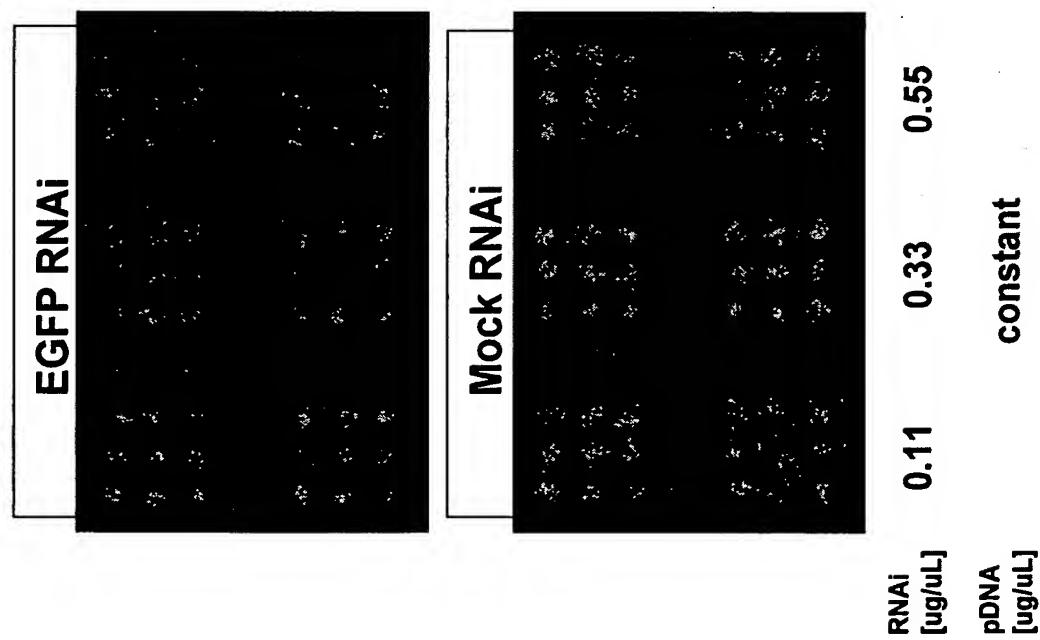
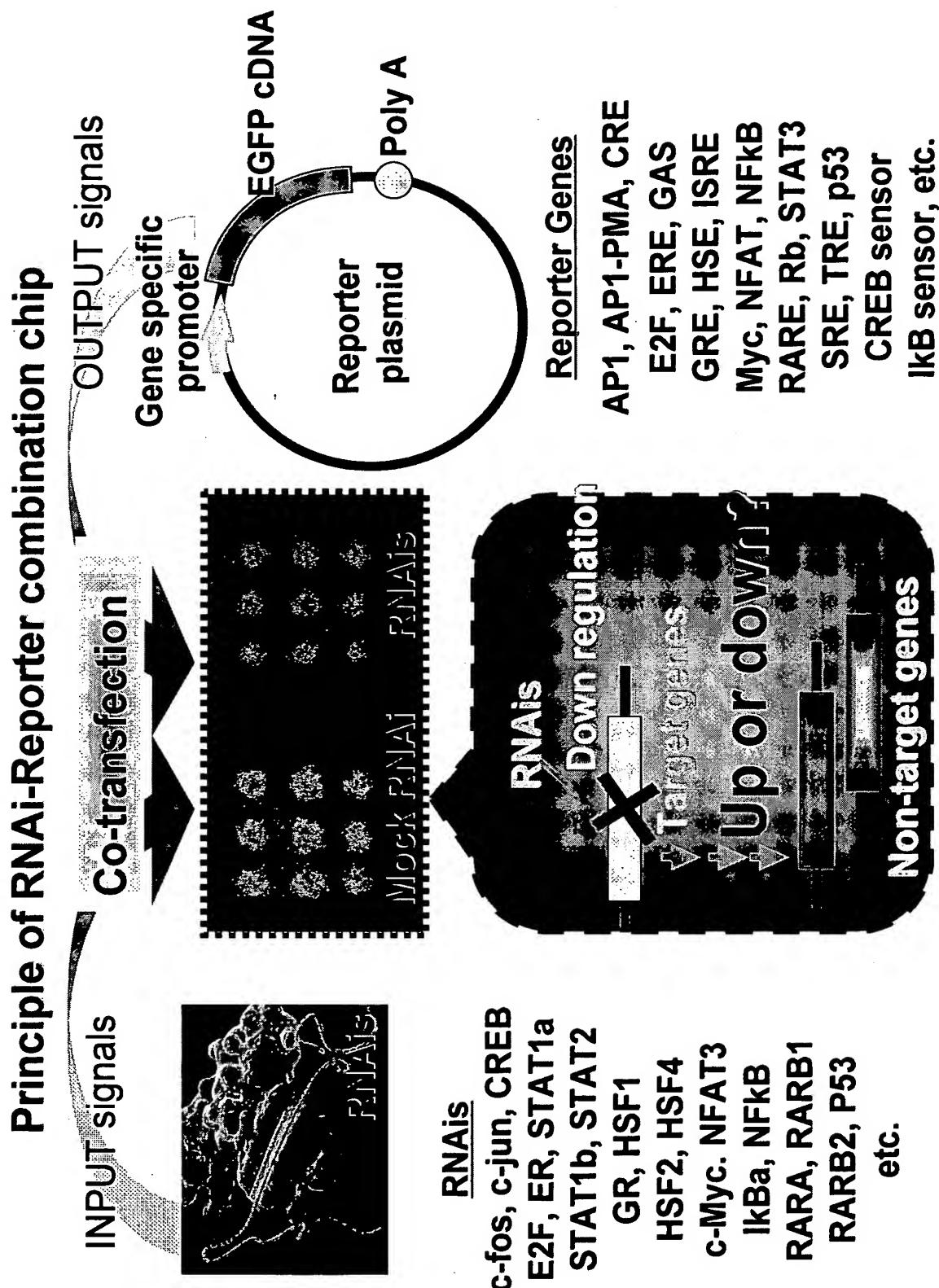
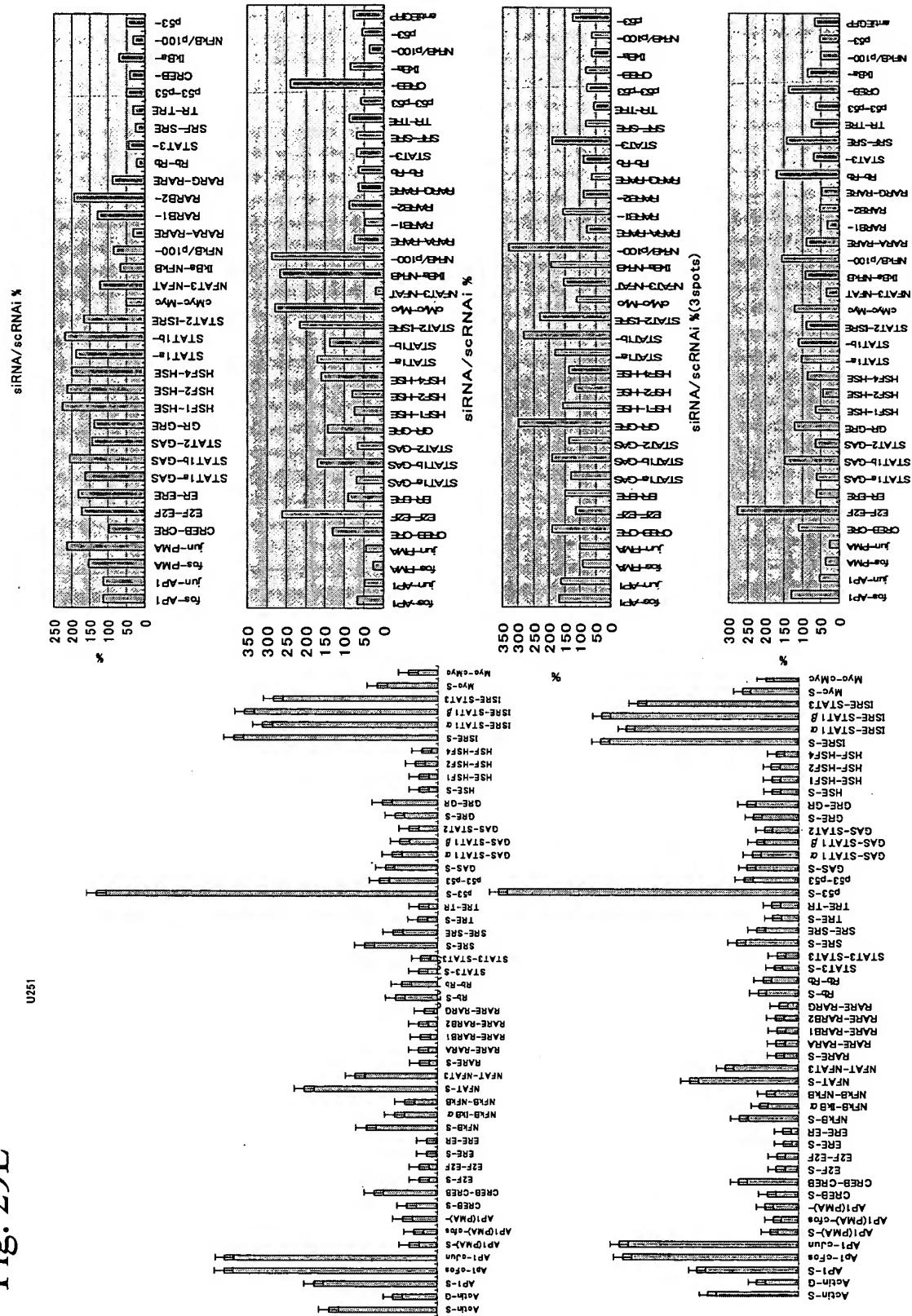


Fig. 29D





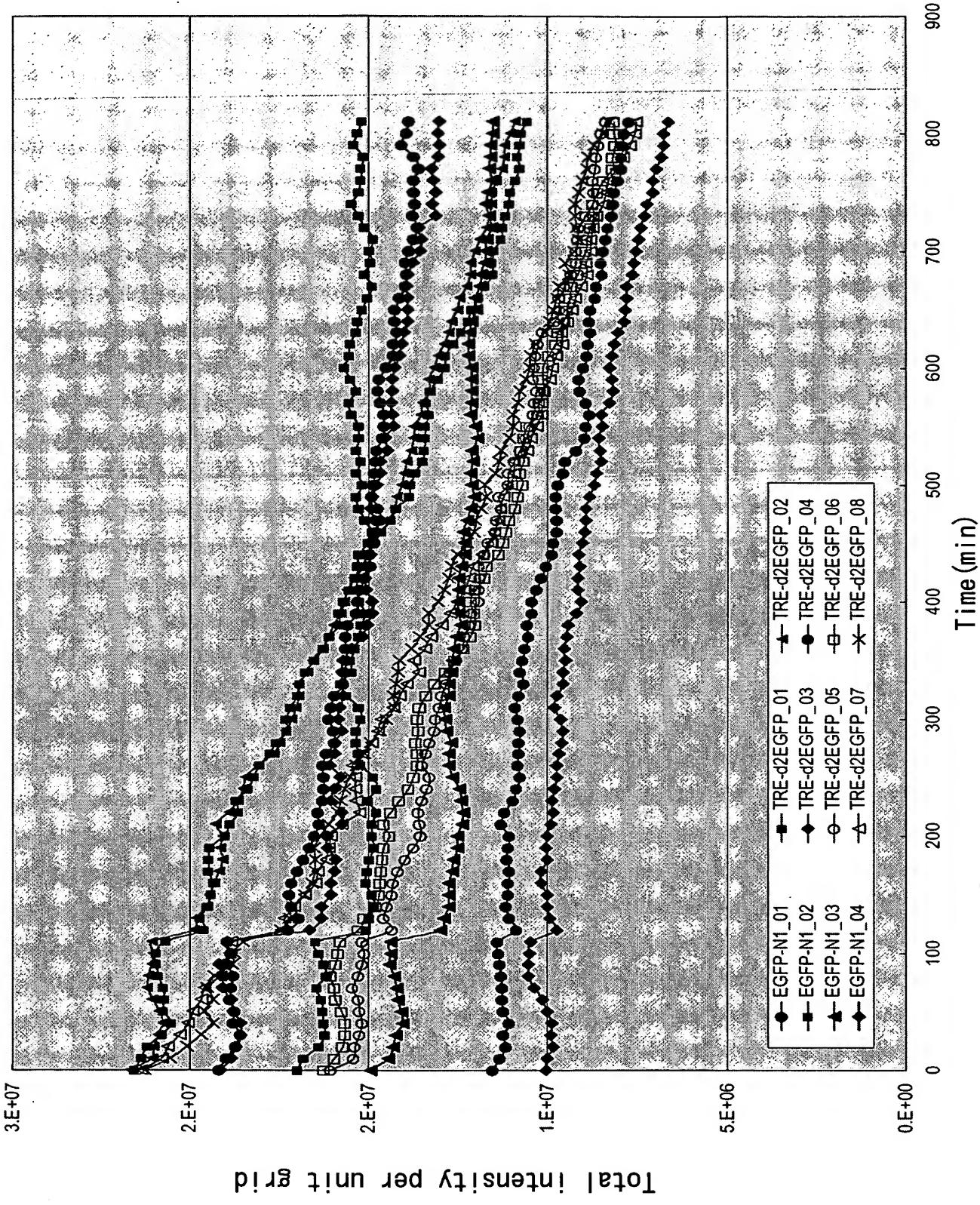


FIG.30

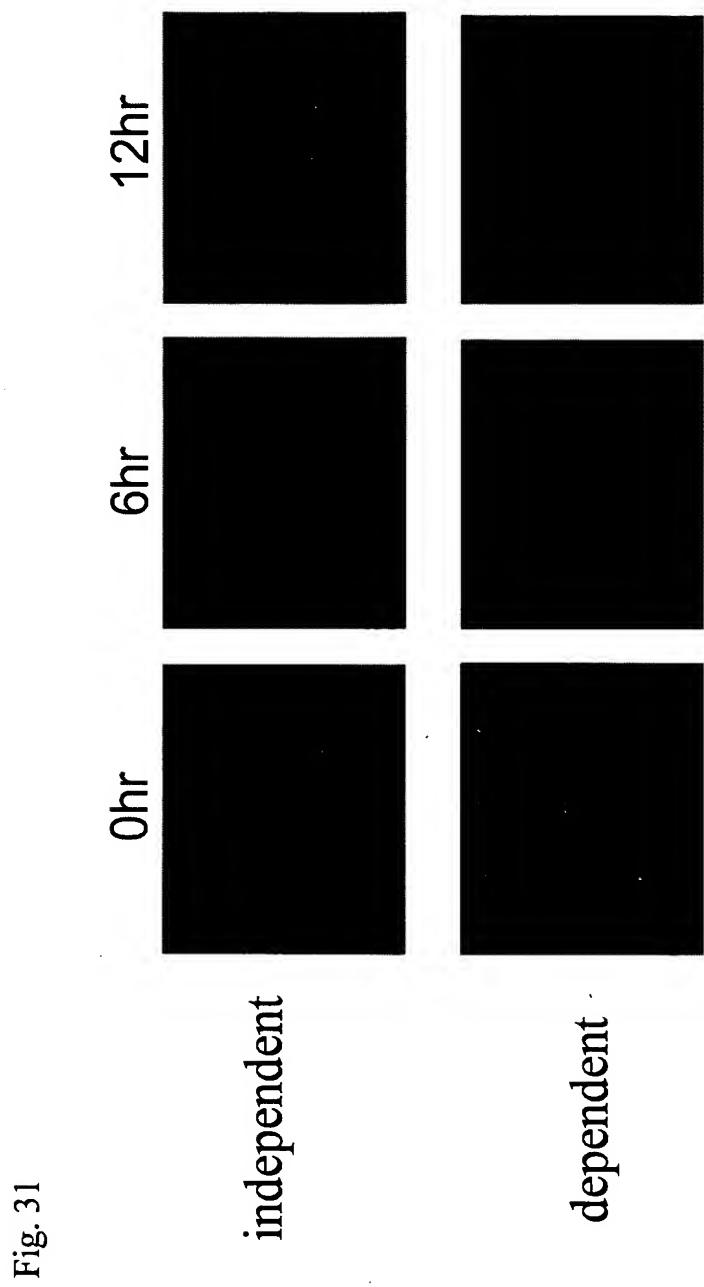


Fig. 31

Fig. 31B

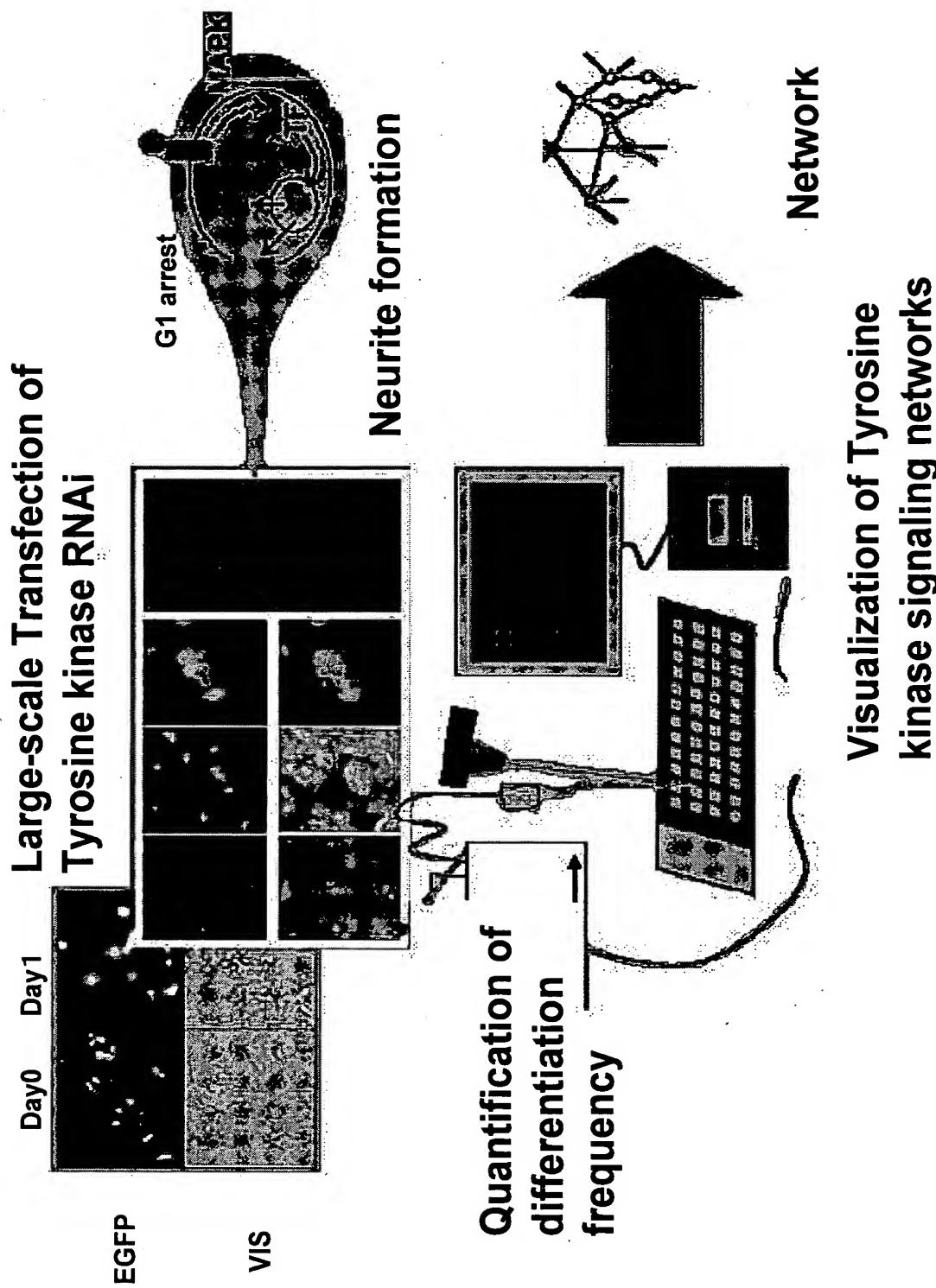
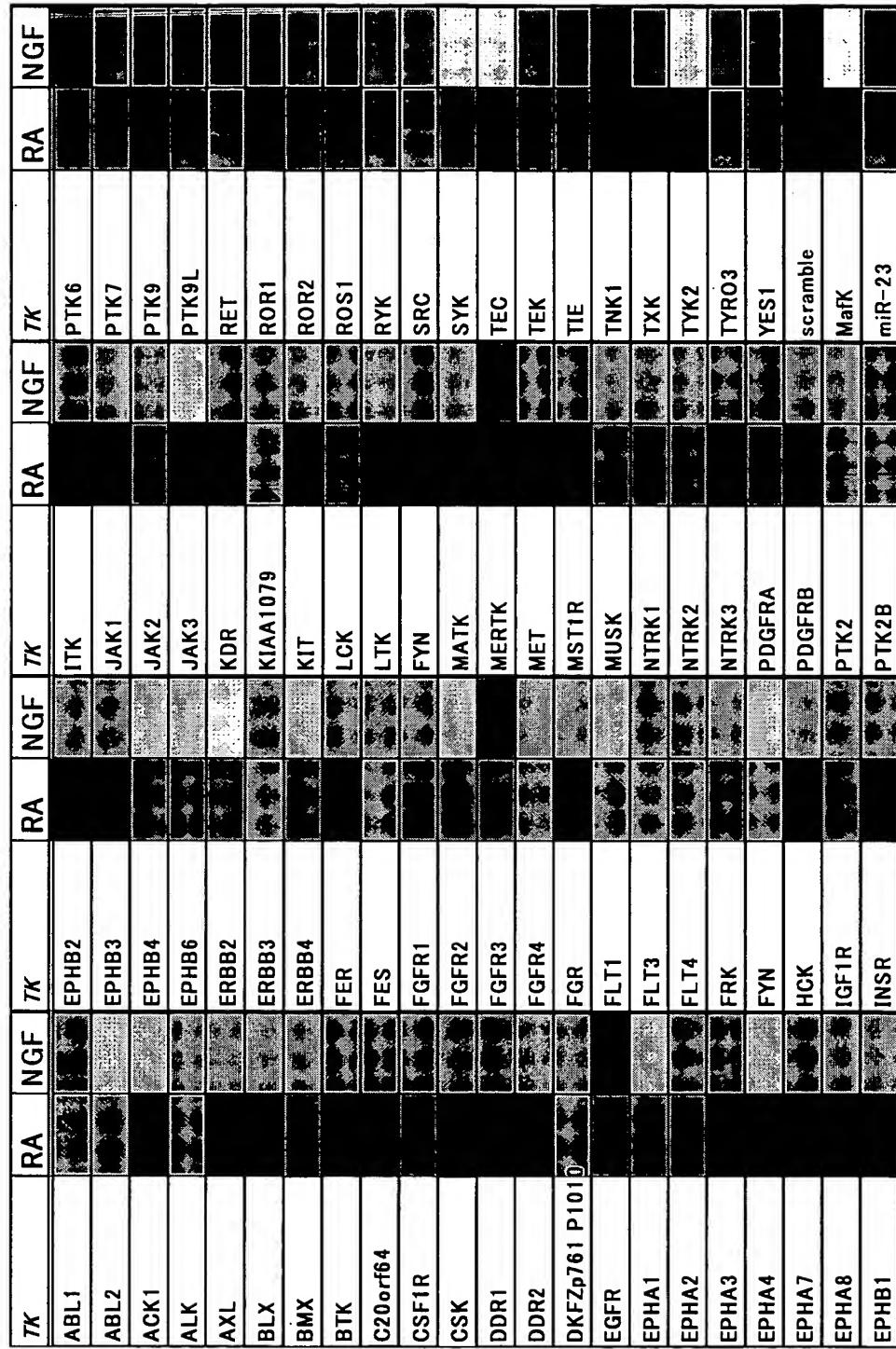
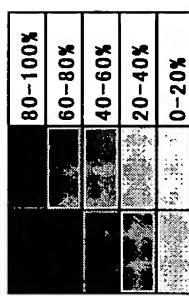


Fig. 31C



(*B-bridge siRNAs against Tyrosine Kinases)

Fig. 31D

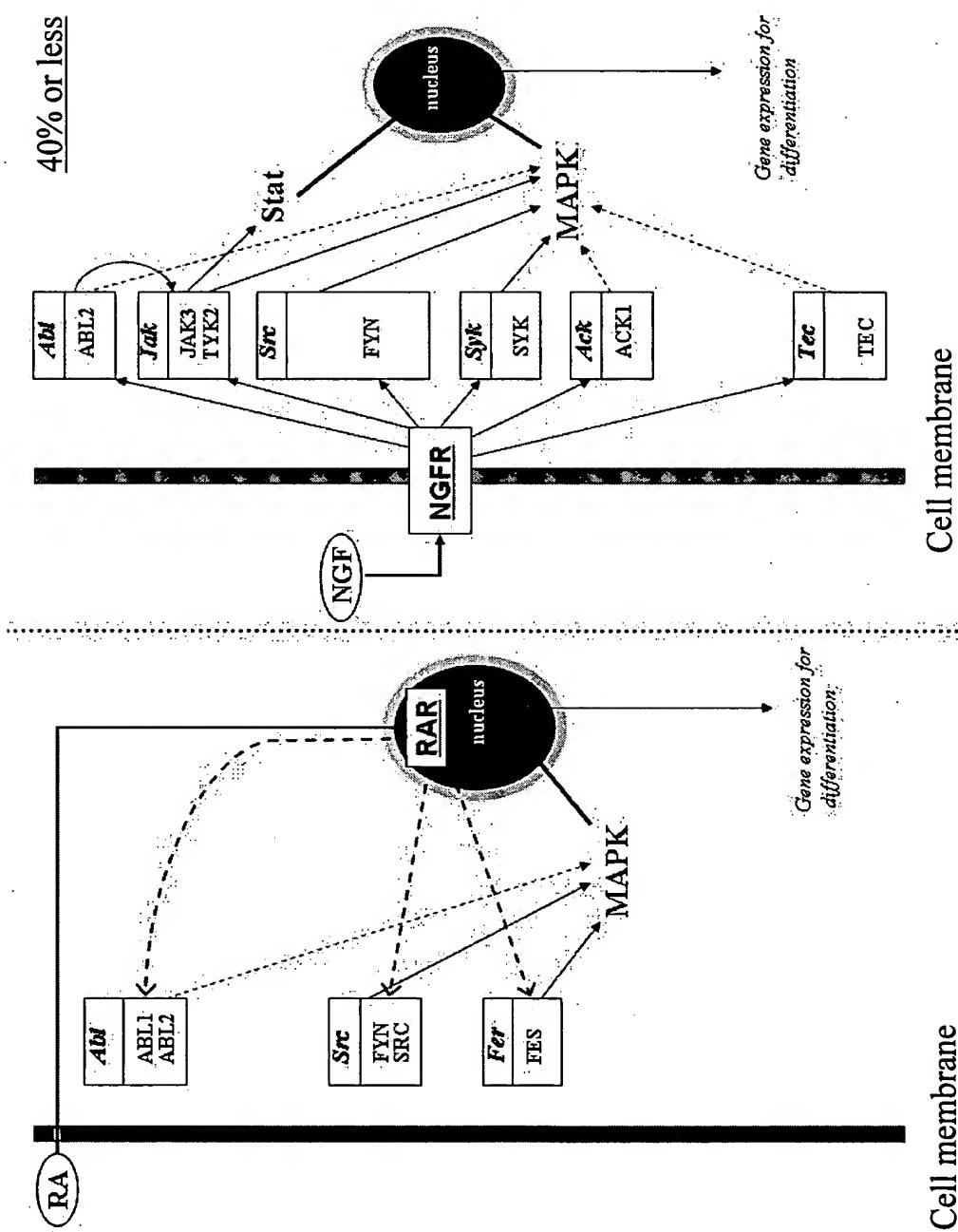
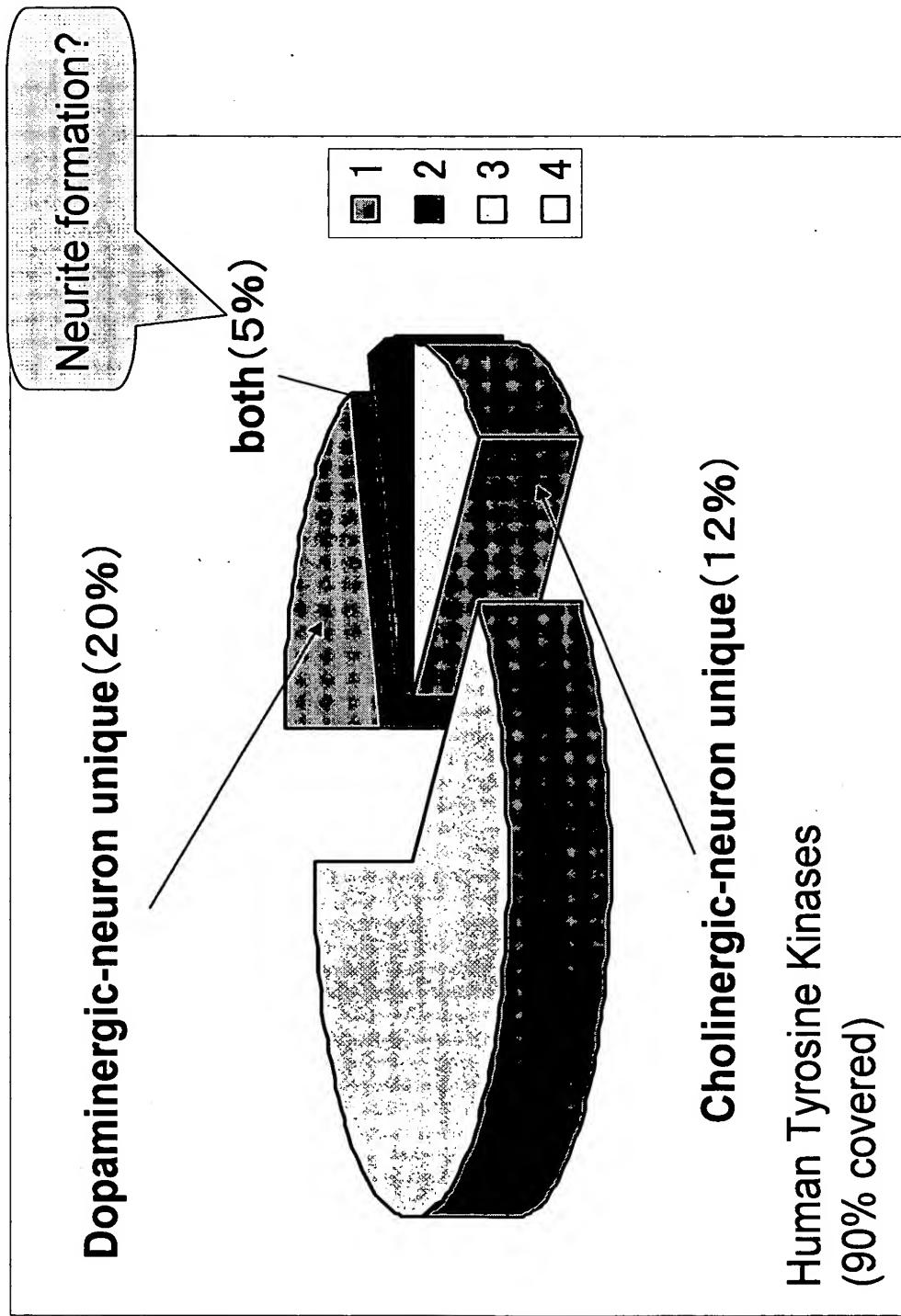


Fig. 31E



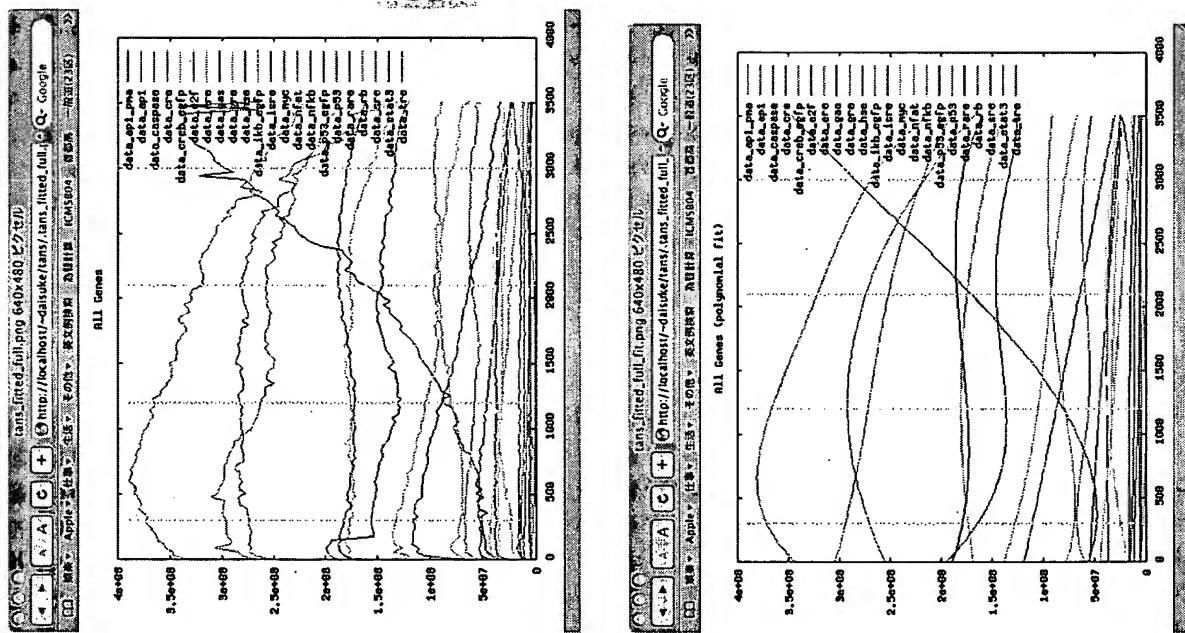
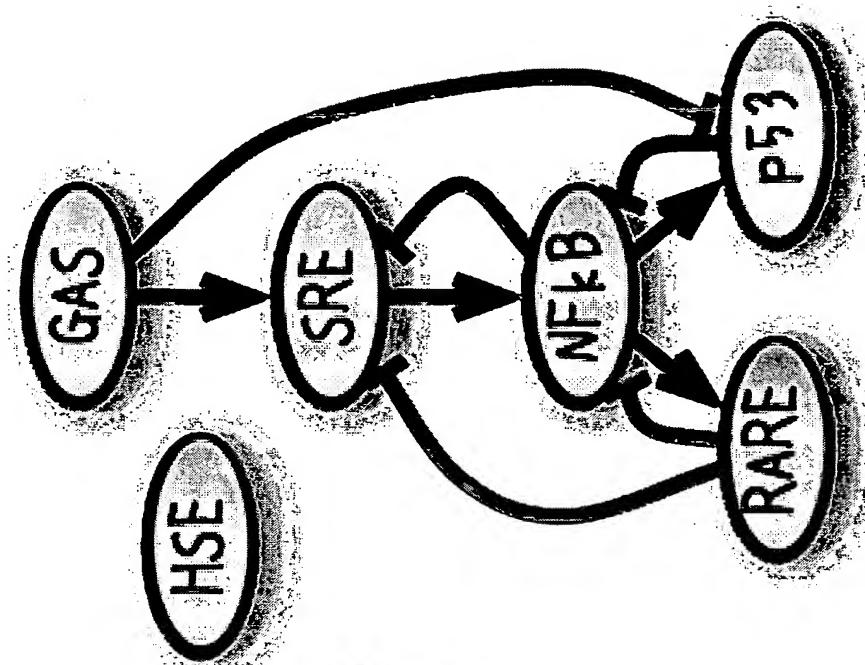


Fig. 31F

Fig. 32

System configuration for producing data of cell profile data

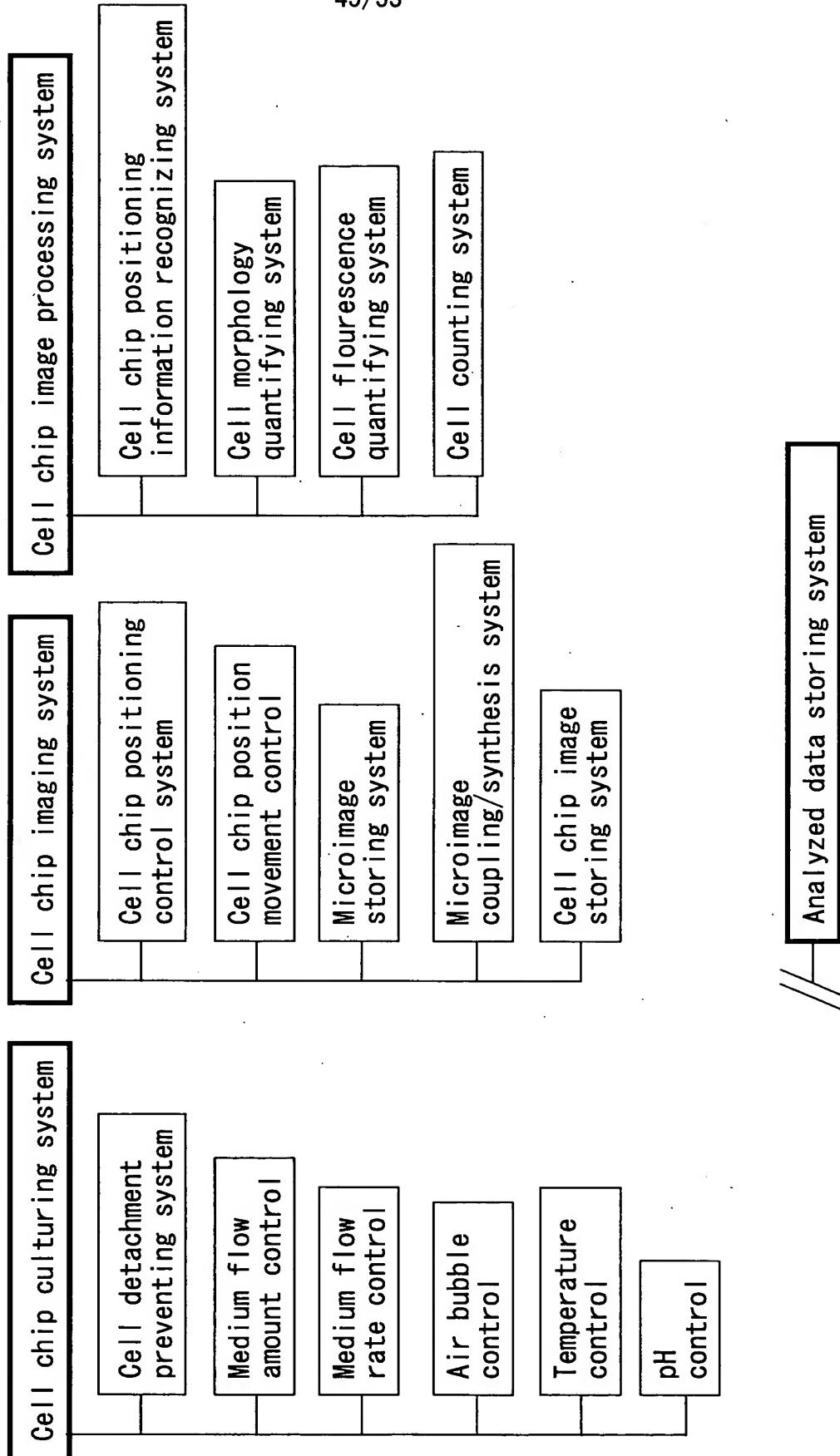


Fig. 33A

46/53

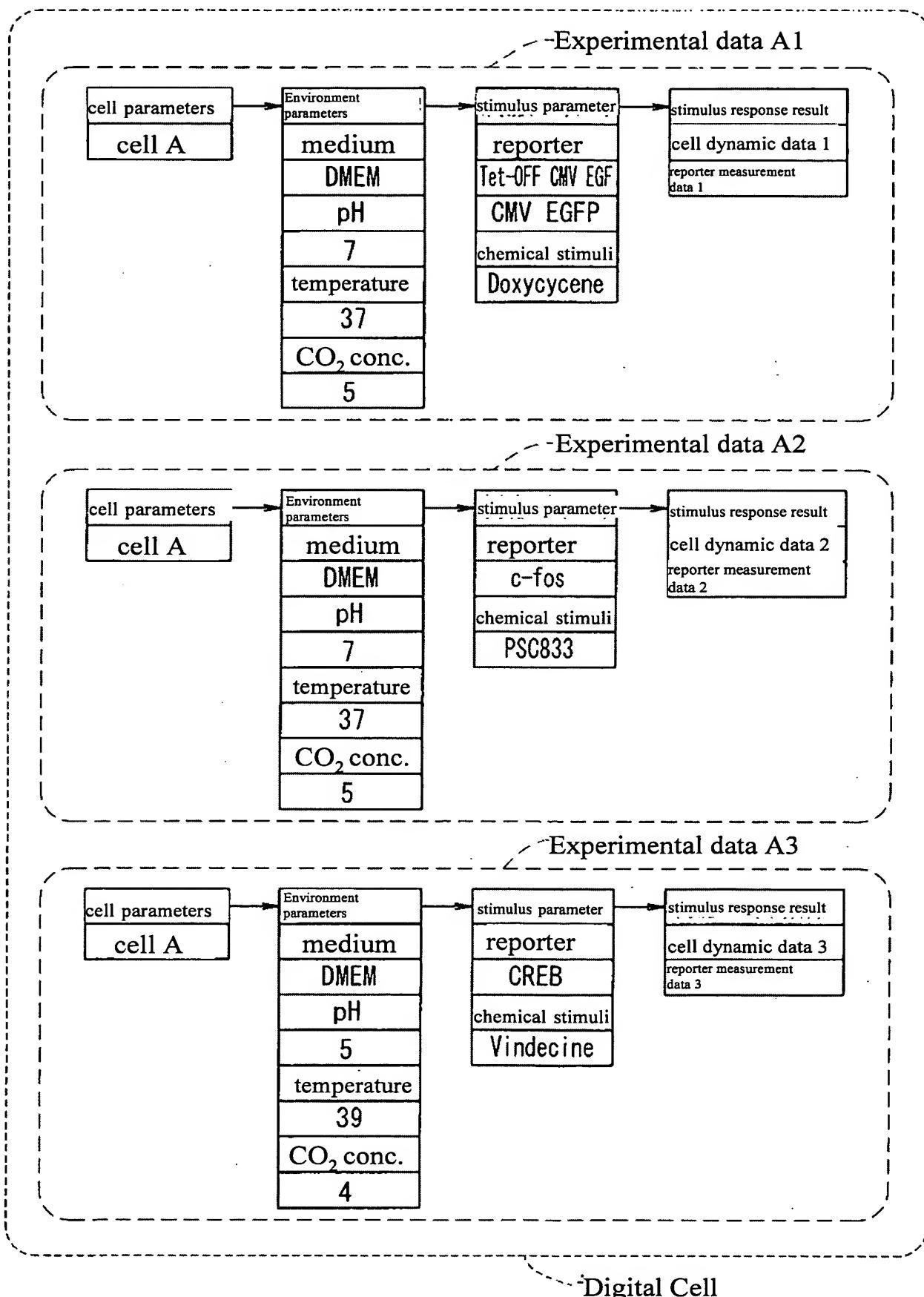


Fig. 33B

47/53

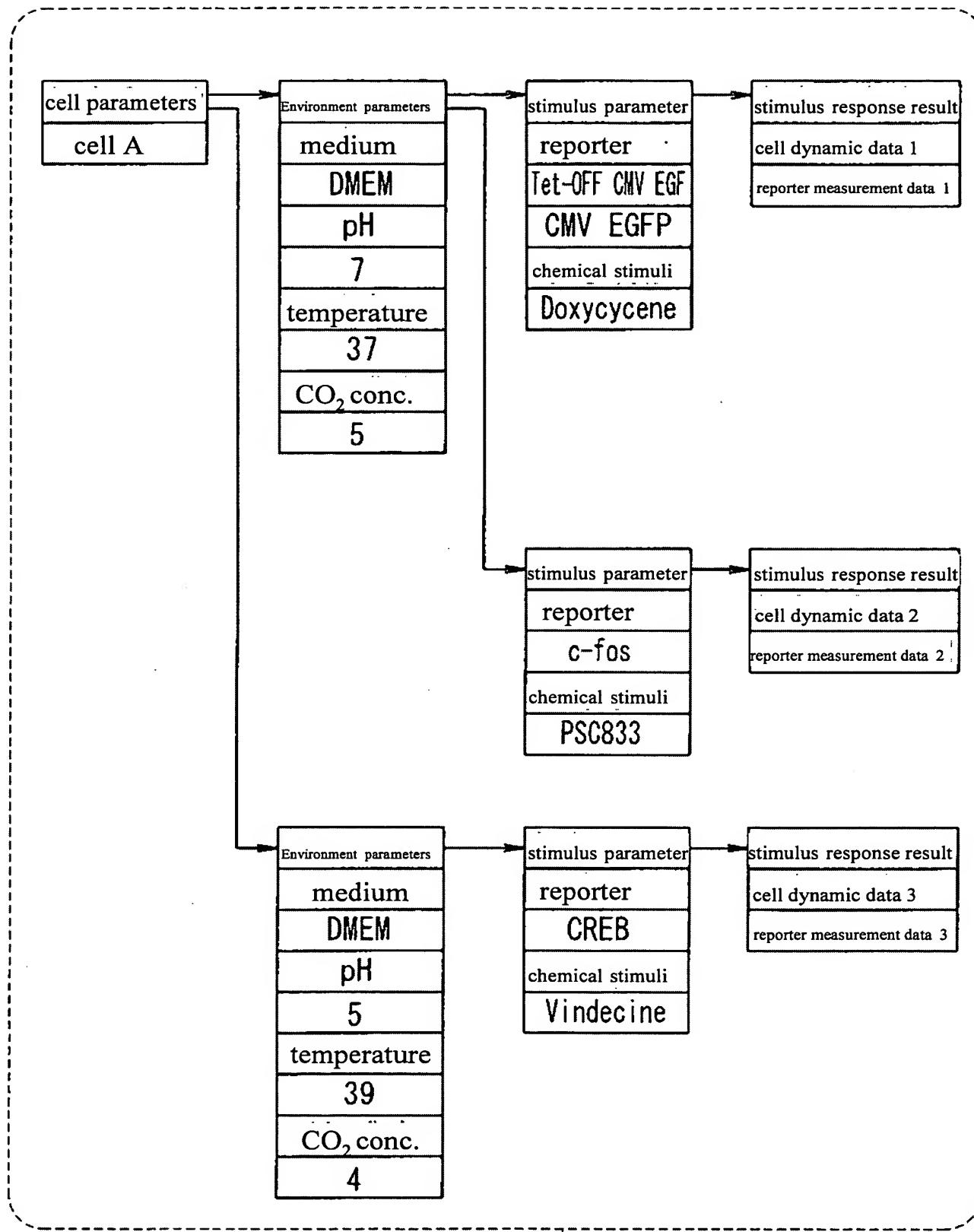


Fig. 34

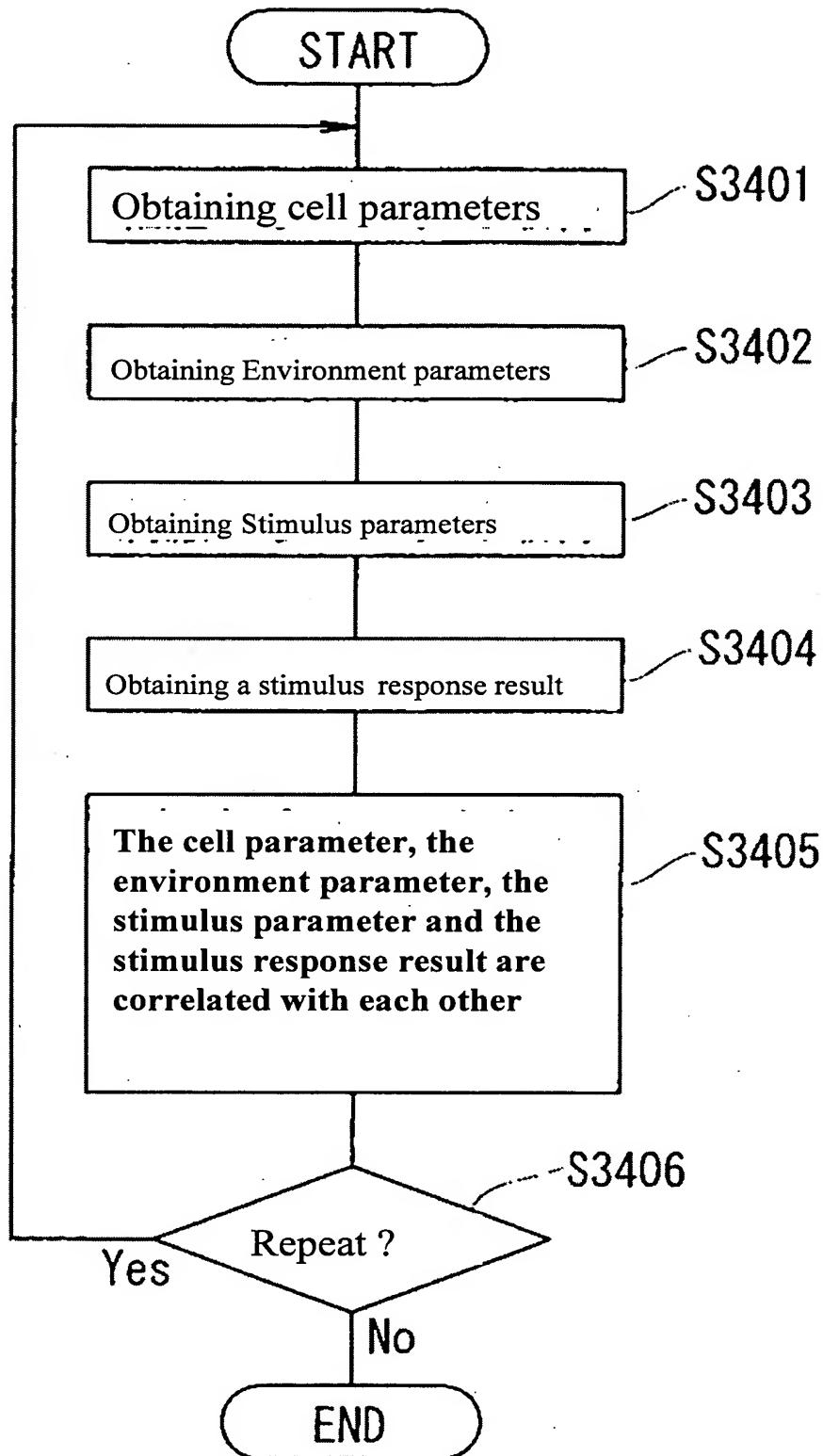


Fig. 35

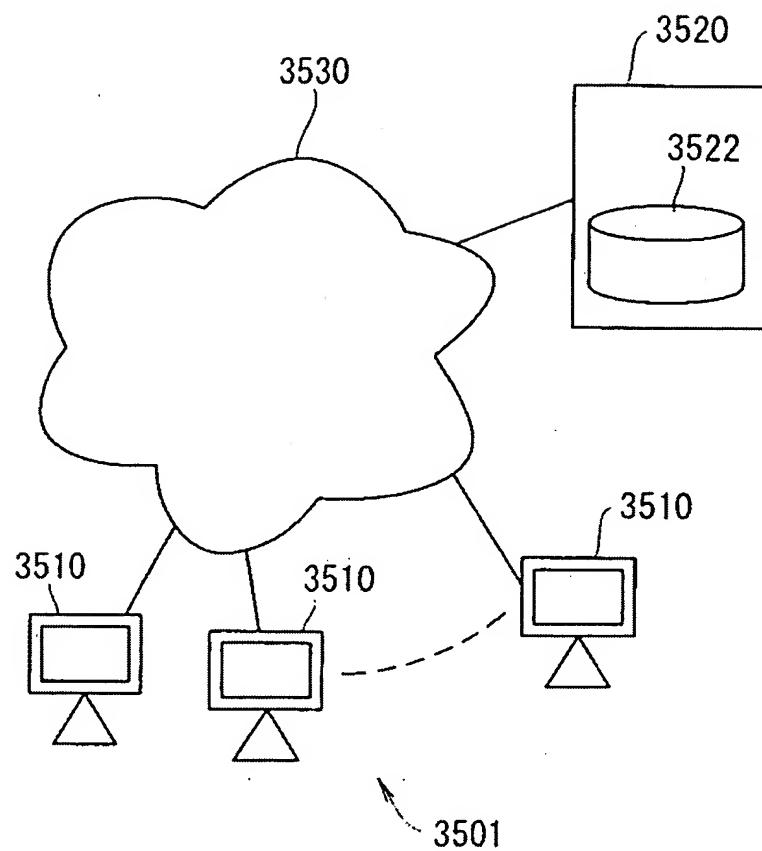


Fig. 36

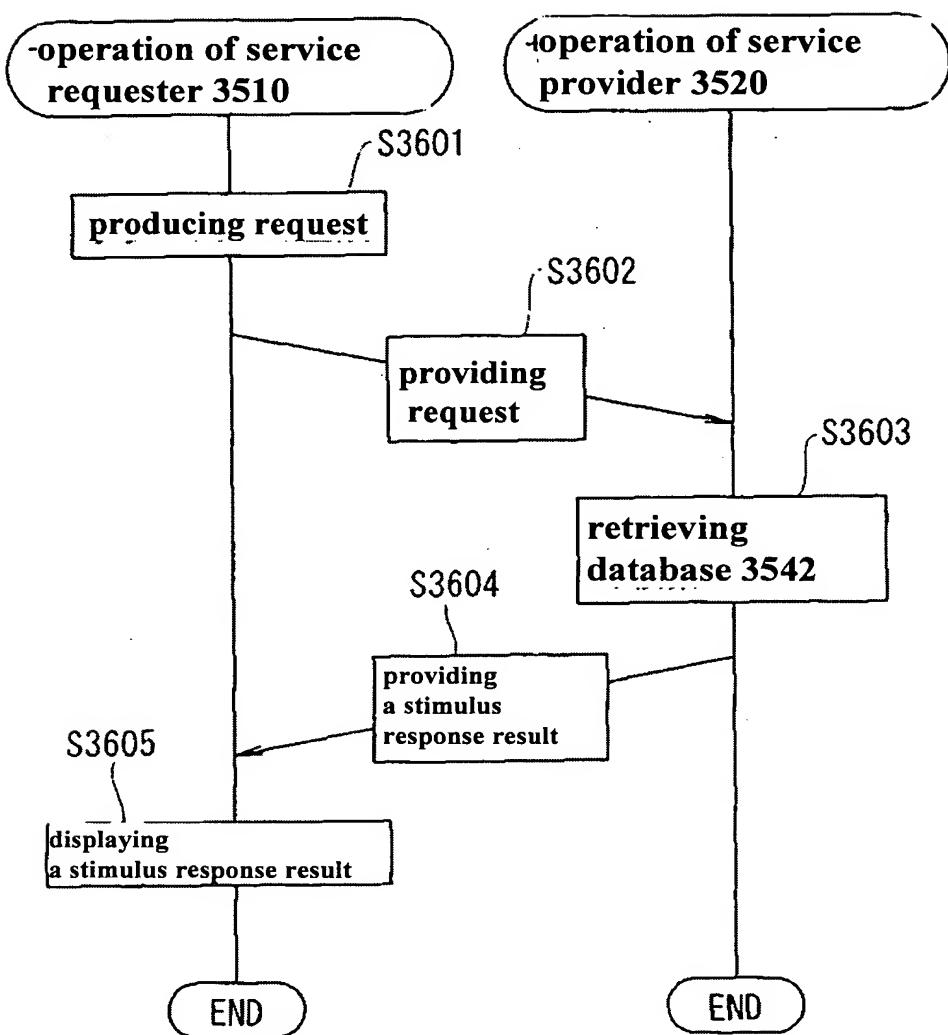
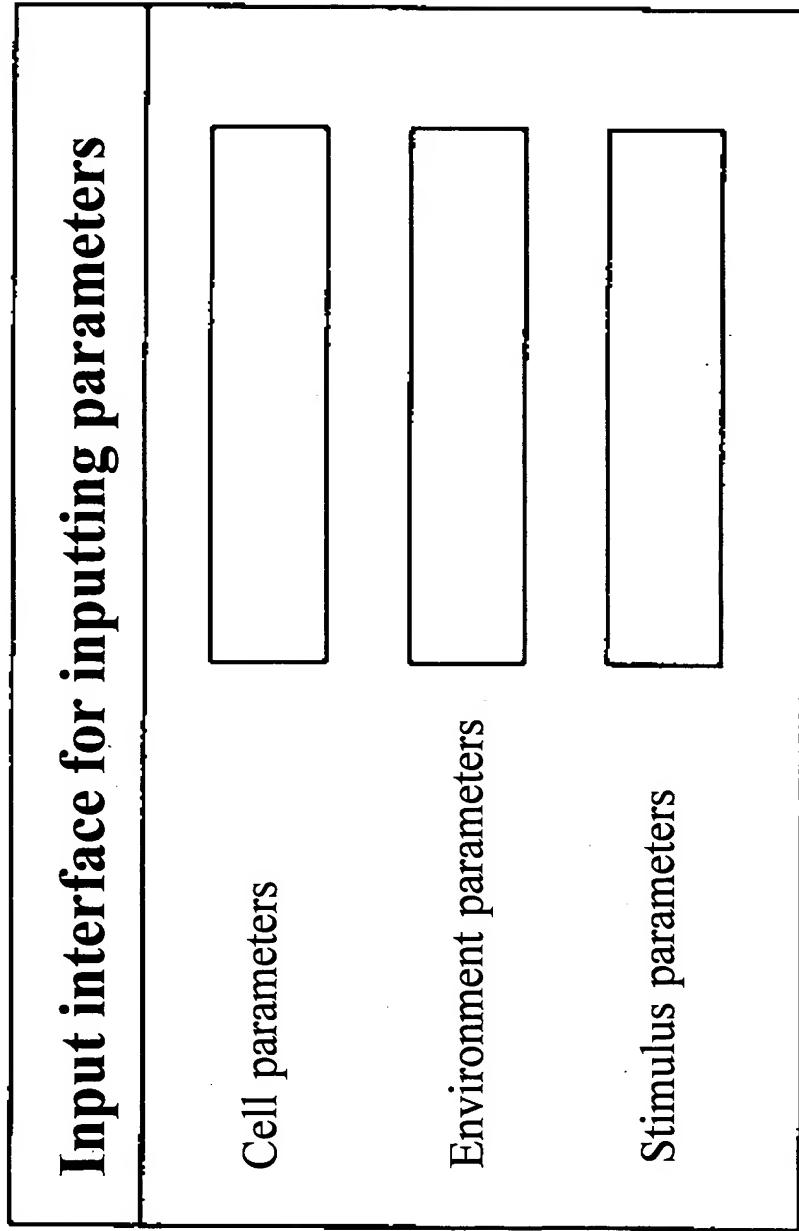
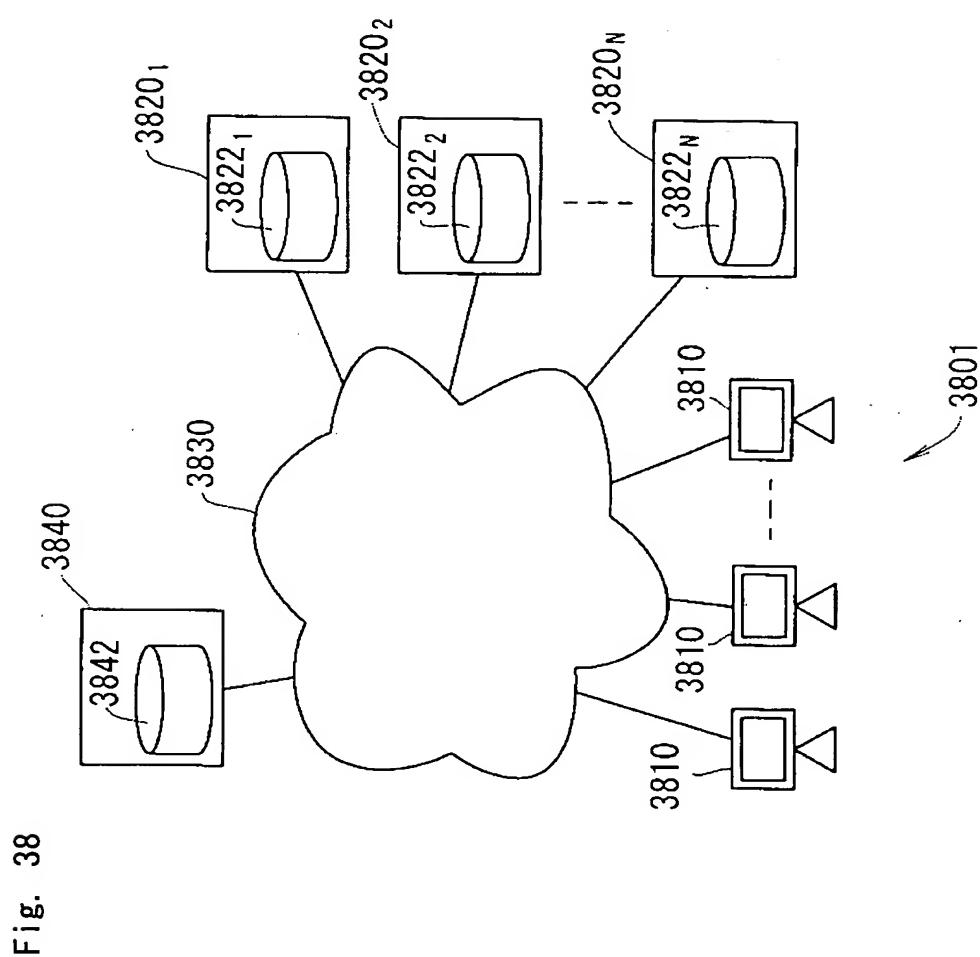
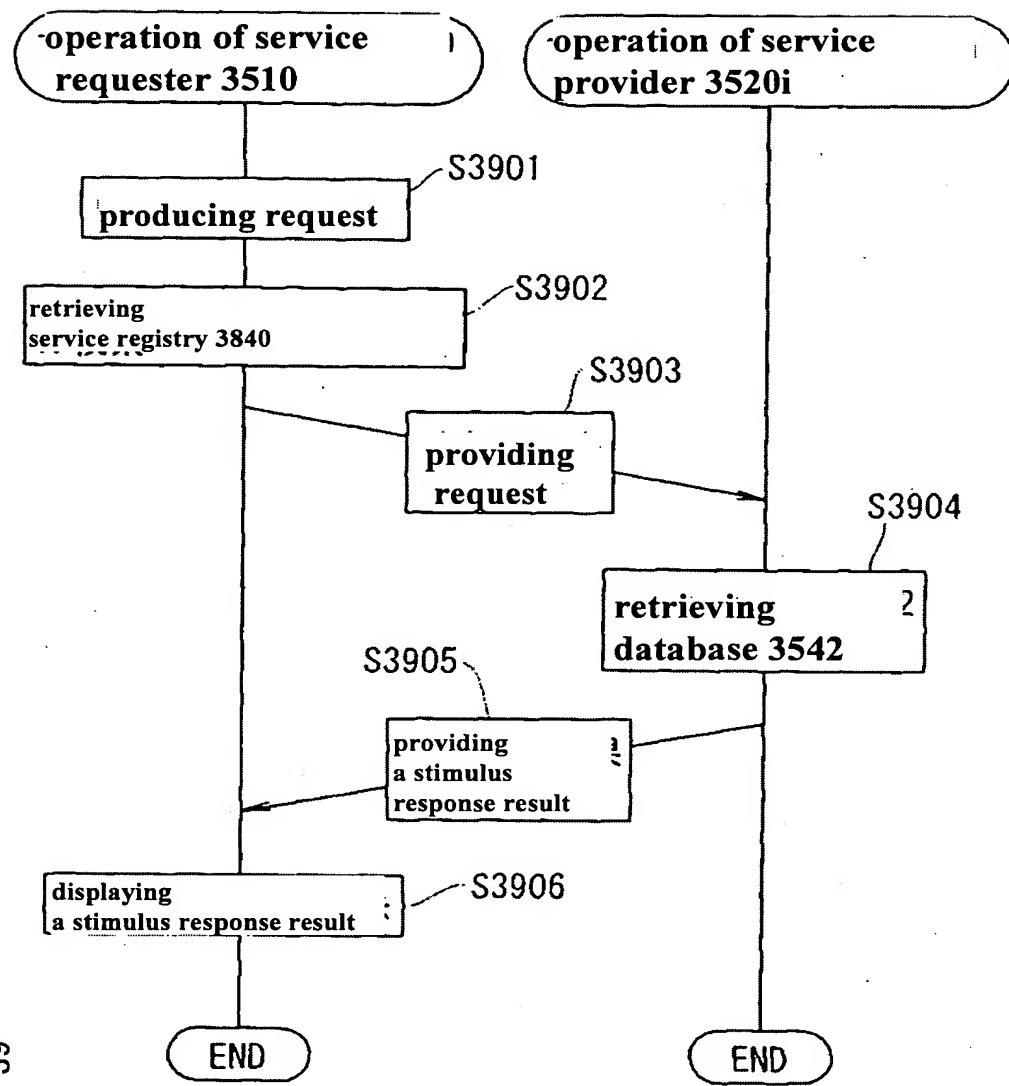


Fig. 37







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